FUTURE OF SUPPLY CHAIN

REPORT

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SCM World

Shaping the Future of Supply Chain

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Prior to SCM World, he served as Group Vice President for Supply Chain at Gartner following the 2009 acquisition of AMR Research, where he was Chief Strategy Officer. In his 10-year career at AMR, he created the Supply Chain Top 25, wrote over 400 published articles and reports, and led a six-year dialogue with business leaders and luminaries such as Bill Clinton, Colin Powell, Michael Eisner and T. Boone Pickens.

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Foreword

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In 2016, several major events have had great implications for businesses. We witnessed big geo-political changes as a result of key elections in different parts of the world; the uncertainties surrounding trade treaties; the big push for the One Belt, One Road initiative by China; Alibaba's record-breaking one-day e-commerce sales of $17.8 billion on 11 November; HP's introduction of its commercial 3D printers; and many other events.

These changes, while posing major challenges for companies, create great opportunities and also the need for supply chain leaders to "rise to the occasion". The Future of Supply Chain 2016 report is therefore especially important. It takes the pulse of supply chain leaders in terms of their responses to such challenges, adjusting to the global trends and the evolution of the digital economy, and creating value along the way.

As in previous years, this report describes how leaders in different regions and industries are developing their supply chain strategies to manage risk, design networks, develop talent and support sustainability. It provides a deep dive into how they are seeking to take advantage of technological advances such as the internet of things, cloud computing, big data, additive manufacturing, machine learning and Uberisation. Alongside the latest snapshots, the report also highlights the thought processes behind the actions or plans of supply chain leaders.

I hope the following pages will give you insights on what these leaders are doing – or not doing – and help to stimulate ideas to shape and strengthen your own strategies and supply chains.

Executive summary

The high stakes supply chain

The future of supply chain is in part a look at trends already in motion and in part a forecast of what lies ahead. 2016 was a tumultuous year geopolitically. Many observers cite the rapid pace of change brought on by globalisation and digitisation as causes of this political turmoil. In terms of supply chain management, the transformations associated with these two megatrends have indeed been disruptive, but not really a surprise.

Globalisation has been in remission among supply chain strategists for at least five years as local-for-local sourcing and production has emerged. Digitisation is well appreciated also, even if still nascent in terms of operational impact and business model change. Senior leaders in supply chain are finding their span of influence expanding. Along with it their accountability for risk and impact rises.

The toolkit available to help these leaders cope is growing. Digital technology is developing very quickly, while the skill sets of supply chain professionals are gravitating towards business leadership more than technical proficiency.

Looking into 2017 and beyond, the stakes for supply chain leaders are clearly rising. The business expects more, customers expect more and society expects more. Survey data in this report points to a level of awareness that suggests supply chain leaders can and will handle all that the world is throwing at us.

2016 survey highlights

Supply chain's position in the hierarchy of business leadership has risen steadily since its earliest days as a collection of support functions including purchasing, production planning and distribution. The modern integrated supply chain is defined by its connections with essential parts of the business including R&D, sales and general management and with the wider world. From this perspective, supply chain management has found itself compelled to develop and exercise both leadership and purpose.

Leadership is all about how and where individuals and teams focus their effort to achieve a goal. Purpose is a matter of seeing beyond the immediate fiscal quarter to the longer term impact of one's work. Both are increasingly essential to defining a great supply chain executive.

Digitisation continues to expand the scope, impact and risk attached to supply chain management. Supply chain's executive power is rising and with it, accountability not only for financial performance but also for business's impact on the world. Happily, optimism for the future of global challenges such as health, hunger and environmental sustainability dominates among supply chain professionals. Perhaps this is because digital is accelerating the pace of change and learning in the profession. We see surging interest in 3D printing, Uberisation, drones and advanced robotics increasingly complementing already strong interest in data analytics, cloud and digital supply chain.

As manifested in digital demand and omnichannel, the future promises more personalisation of products, services and content. This means still more complexity in terms of SKUs, fulfilment modes and even distribution network designs. Social media continues to gain influence and offer additional insight in terms of demand sensing going forward. Coupled with big data analytics and the surge in personalisation, social media could come to play a significant role as supply chains localise and SKUs proliferate.

Data security and IT incidents have risen steadily as a risk factor since 2012. Events of 2016 only seem likely to add to this concern going forward. External risk factors including not only data security, but regulatory and transport-related issues are still rising, even as supplier failure-related problems are receding. Visibility leaders in hi-tech, fabric & apparel and automotive have learned to manage supplier business risk by seeing more clearly upstream. They will next need to tackle the more unpredictable risks arising from non-business actors.

Globalisation is in sudden retreat. Politically, 2016 was an extraordinary year with free trade under attack all around the world. Three-year hiring plans in supply chain organisations show a continuation of trends towards regional or even local supply networks. The trend was first clear in 2012-13, when manufacturing footprint research indicated a pull back from low-cost country sourcing in favour of sourcing and production closer to end markets. Looking into 2017, it seems clear that local-for-local supply chain management will continue to grow.

Social and environmental responsibility (SER) has continued to embed itself more deeply in the day-to-day practice of supply chain management. Most prominently, cost savings as an incentive for SER investment continues to strengthen. Several SER activities have gained ground in terms of their ability to generate a financial payback including waste reduction, renewable energy and circular economy.

The war for talent is worse than ever. Demand for business leadership now equals and in some cases surpasses that for technical skill in planning, sourcing, production and logistics. Among top senior executives the importance of business leadership is even more prominent. 91% of C-level leaders say that communication and influence is an essential skill for the supply chain executive of 2020.

Leadership and purpose

Just over half of all respondents to our Future of Supply Chain survey 2016 believe that supply chain management holds a seat at the table, setting direction for the business as a whole. This figure hasn't changed much over the past five years; however, the depth of appreciation for what it means to share leadership has evolved.

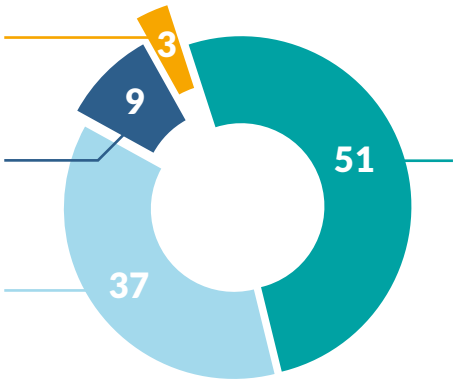
1. Do your CEO and executive management team appreciate the alignment of business and supply chain strategy?

% of respondents | n=1,411

No. Supply chain is strictly seen as a function meant to service the business.

Not really. Supply chain is understood primarily as a cost centre that affects margins.

Yes, but only as an enabler of product- or sales-driven business strategies.



Absolutely. Supply chain is understood as an equally important part of business success as sales & marketing or R&D/ product development.

There's a rising share of senior supply chain executives who see their role as equal to that of other essential functions in the business. At the same time, the portion saying this among more junior supply chain professionals has dropped. When viewed against the steady stream of CEOs or business unit presidents who have risen directly out of the supply chain function, one implication may be that top executives are in fact experiencing the realisation of a trend predicted years ago, that supply chain would gain stature.

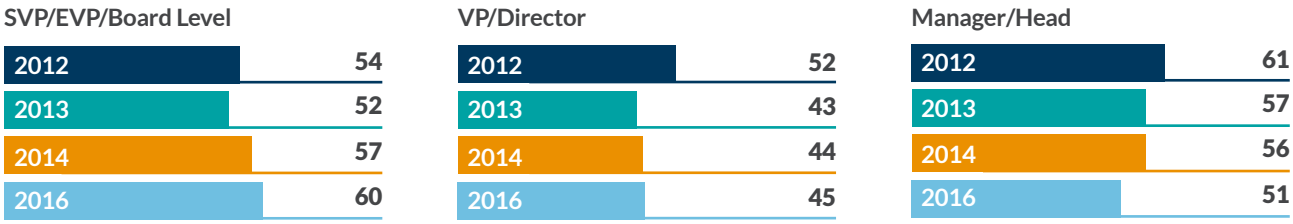
There is a steady stream of CEOs or business unit presidents who have risen directly out of the supply chain function.

Meanwhile, those a few levels below have been exposed to more of the cross-functional dependencies that drive business results. Their lesson may have been that supply chain, while essential to business success, operates best as an enabler of a higher level of business strategy, fed by work in marketing, R&D and sales.

Cross-functionalism is here to stay, with C-level executives in marketing, R&D and sales showing more open appreciation of supply chain's work, even as mid-level professionals within supply chain learn more intimately how their jobs depend on the work of other functions. No one function can guarantee results and people seem increasingly to appreciate this.

2. The role of supply chain is equal to other business functions: the view by seniority

% of respondents who say 'the role of supply chain is equal to other business functions'
2012 n=1,315 | 2013 n=736 | 2014 n=1,065 | 2016 n=1,411

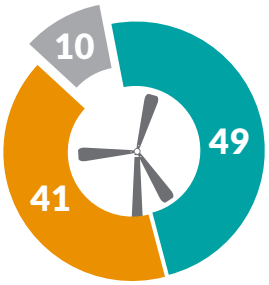


In terms of purpose beyond business results, supply chain practitioners continue to believe that they can affect the world at large. Environmental sustainability in particular is something supply chain feels it can impact positively. Applying a forward-looking lens, it's also clear that optimism dominates pessimism in aggregate for all three major global challenges – health, hunger and environmental sustainability.

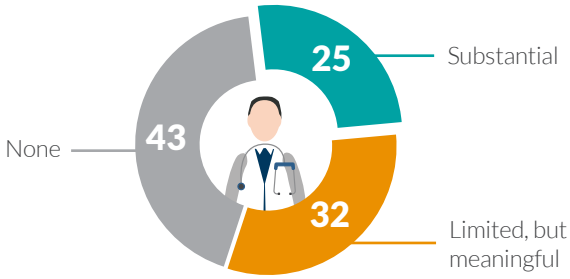
3. Higher purpose

What role does your supply chain play in addressing each of these global challenges?

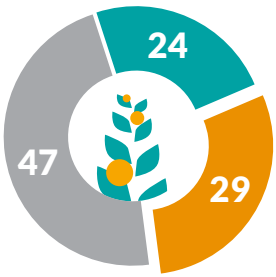
% of respondents | n=1,411



Ensuring long-term environmental sustainability



Providing accessible healthcare

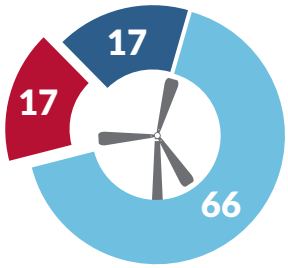


Feeding the world

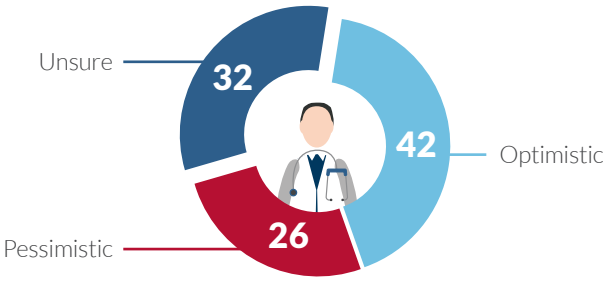
4. Higher purpose

Most respondents feel optimistic about supply chain's impact on each of these global challenges

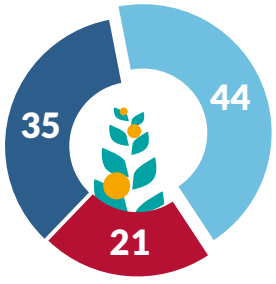
% of respondents | n=1,413



Ensuring long-term environmental sustainability



Providing accessible healthcare



Feeding the world

We do see significant differences in attitude, both geographically and by industry, however. For executives based in Asia, for instance, all three challenges are widely seen as 'substantially' impacted by the respondents' supply chains, while in Europe the share is much lower. This could reflect Asia's relative youth in organisational development, which may confer greater scope of influence, or it may reflect Asia's heavier physical footprint in terms of manufacturing and distribution.

When cut by industry, it seems hi-tech is most bullish on the question of environmental sustainability. This makes sense for a sector that's moving steadily away from physical product value chains and towards purely digital products including software, services and pure content.

CPG & retail are most likely to claim ownership of feeding the world, but the leadership gap is small. Industrial respondents, for instance, are only marginally less likely than CPG or retail to say that their supply chains have a 'substantial impact' on feeding the world. And finally, healthcare & pharmaceuticals stand out clearly as aware of their role in addressing human health – just less than 60% say their supply chains are substantially accountable for providing accessible healthcare.

Purpose beyond profit is indeed part of supply chain practitioners' sense of mission.

5. Supply chain plays a 'substantial' role in addressing each of these global challenges

% of respondents | n=1,393

Ensuring long-term environmental sustainability

Australia & Asia	61
North & South America	49
Europe, Middle East & Africa	43

Providing accessible healthcare

Australia & Asia	30
North & South America	26
Europe, Middle East & Africa	24

Feeding the world

Australia & Asia	37
North & South America	20
Europe, Middle East & Africa	25

6. Supply chain plays a 'substantial' role in addressing each of these global challenges

% of respondents | n=1,286

Ensuring long-term environmental sustainability

Hi-tech	56
CPG & retail	53
Industrial	48
Healthcare	44

Providing accessible healthcare

Hi-tech	17
CPG & retail	16
Industrial	20
Healthcare	59

Feeding the world

Hi-tech	12
CPG & retail	30
Industrial	23
Healthcare	22

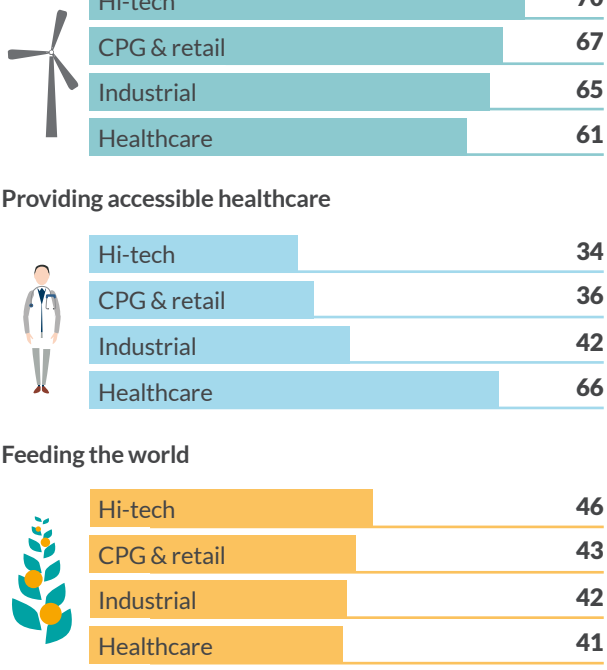
Our questions about the future prospects for these global challenges also reveals a comforting outlook. More than 60% in each sector say that they're optimistic about environmental sustainability over a three-year horizon. This is meaningful because of the nature of supply chain as co-dependent across sectors for inputs like chemicals, packaging and energy, and because collaboration on distribution and customer fulfilment depends on all sectors looking in partnership for cleaner, cheaper ways to work.

The optimism of healthcare respondents about the three-year prospects for providing accessible healthcare is also very encouraging. Fully two-thirds proclaim their optimism against only 14% who say they are pessimistic. Again, the insider perspective of supply chain offers reason for hope that discoveries not only in medical science, but also in scaling production and logistics, will deliver for world health.

7. Respondents are largely 'optimistic'

Looking ahead three years, what is your general outlook on each of these global challenges?

% of respondents | n=1,286



8. The optimistic:pessimistic ratio for the three global challenges

Looking ahead three years, what is your general outlook on each of these?

1:1 ratio of respondents citing optimistic vs pessimistic | n=1,394

Digitisation

Among key external trends affecting supply chain this year, digitisation is once again dominating the discussion. We find big jumps in importance for a series of disruptive technologies, some of which were considered largely irrelevant just a couple of years ago.

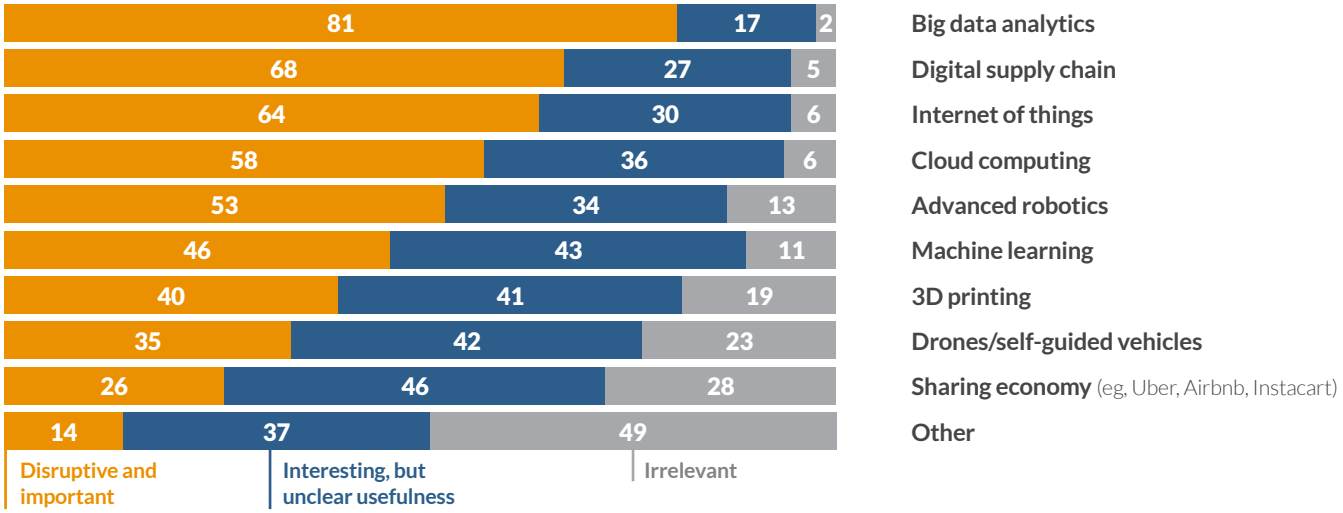
Nearly all categories of technology are up over last year and several (advanced robotics, internet of things, digital supply chain and cloud computing) have jumped from minority to majority acceptance as 'disruptive and important'.

When this data is cut by industry, we see some interesting differences. Hi-tech leads all sectors in most technology categories outside of operational technologies such as 3D printing, advanced robotics and drones. The deep link between hi-tech products and information technology services may explain this. In contrast, industrial respondents lead all others in their enthusiasm for such operational technologies.

9. Disruptive technologies

'Disruptive and important' technologies with respect to supply chain strategy

% of respondents | n=1,415



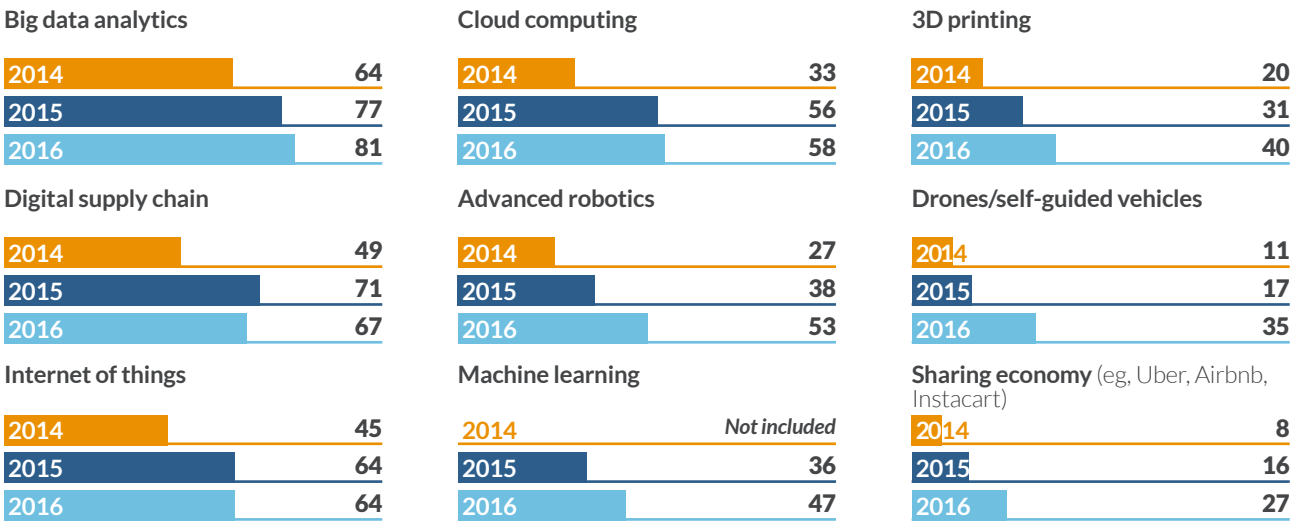
The low-volume/high-mix nature of many industrial products make such technologies interesting from a cost and agility perspective.

The CPG & retail and healthcare & pharmaceuticals sectors have very similar profiles overall, with CPG ahead on terms of acceptance across eight of the nine technologies considered. This conforms to a pattern of healthcare following consumer products in developing supply chain practices. The only exception, and one that suggests healthcare supply chains are starting to look for unique innovation, is in the area of 3D printing. Adoption here is picking up quickly.

10. Disruptive technologies

'Disruptive and important' technologies with respect to supply chain strategy 2014-2016

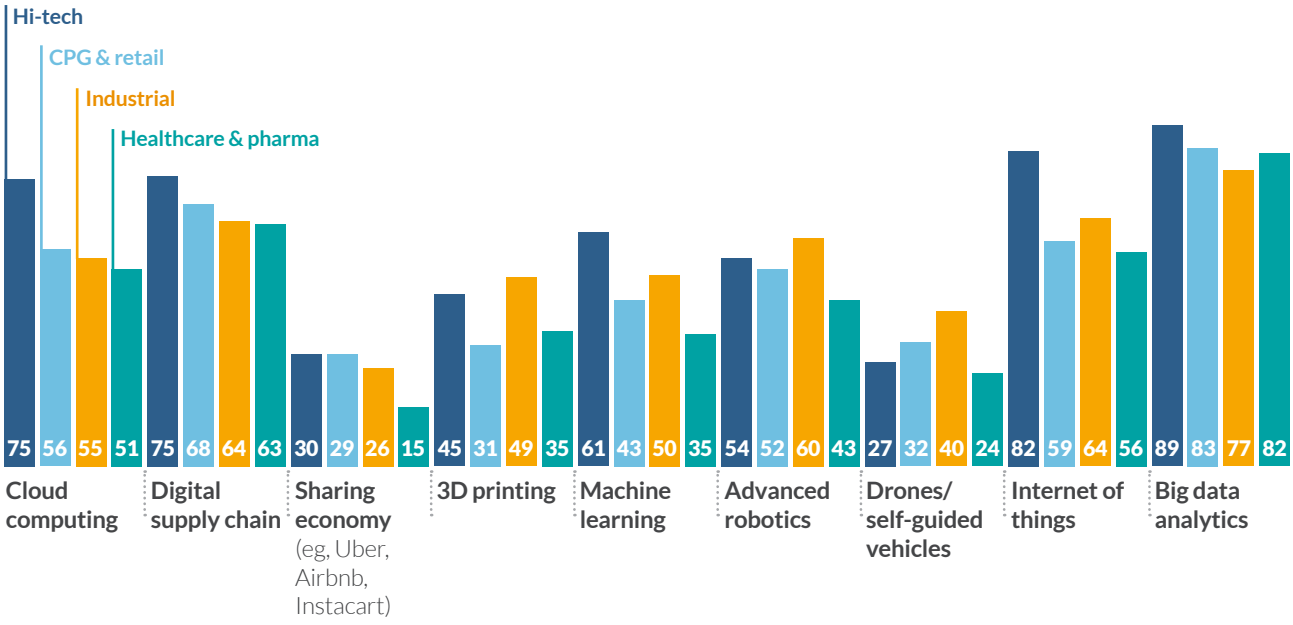
% of respondents | 2014 n=1,060 | 2015 n=1,018 | 2016 n=1,415



11. Disruptive technologies

'Disruptive and important' technologies with respect to supply chain strategy

% of respondents | n=1,285



Five specific trends within the data bear discussion as examples of the kind of changes digitisation is driving in supply chain. Although these are by no means exhaustive they do point to new thinking about what digital means to supply chain strategy.

3D printing is growing quickly in healthcare. Over the course of just 26 months, the share of supply chain executives in the healthcare and pharmaceutical sector who regard 3D printing as important has increased more than five-fold. Production volumes from leading manufacturers show that the technology is ready for prime time. Otherwise impossible shapes can be made with extraordinary precision using 3D printing and new materials are constantly being explored. Plus, patient-specific designs can be made more easily and more precisely than with traditional manufacturing techniques. Expect this to keep growing.

Uberisation is growing everywhere. When first offered 'sharing economy or Uberisation' as a potentially disruptive technology for supply chain strategy, only 8% bought in. The visibility and success of Uber's ridesharing service was prominent enough when we surveyed this question in mid-2014, yet most regarded it as irrelevant or at best, 'interesting but of unclear usefulness'.

12. 3D printing is disruptive and important to supply chain strategy

Healthcare & pharma

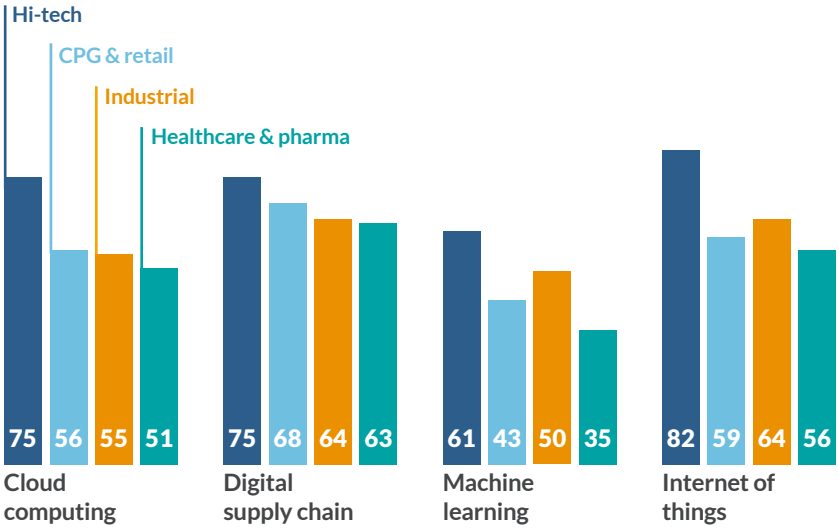
% of respondents | 2014 n=138
2015 n=140 | 2016 n=229

13. Uberisation is disruptive and important to supply chain strategy

% of respondents | 2014 n=1033
2015 n=979 | 2016 n=1403

14. Disruptive technologies and Hi-tech fulfilment systems

% of respondents | n=1,283



In two years since, interest in Uberisation has more than tripled to 27% across all sectors. Examples like UberRUSH and Instacart, as well as start-ups like Convoy and Cargomatic, demand attention. Consumer and hi-tech groups are more likely to embrace Uberisation, but even industrials see potential in efficiency gains from otherwise idle assets and labour. When cut by functional role, our data shows nearly a third of purchasing and logistics people like the idea, while only 12% of manufacturing executives agree.

IoT, cloud, digital supply chain and machine learning are the fulfilment systems of the future for hi-tech manufacturers. These four technologies comprise four of the top six overall on our list. When we cut the data by sector, however, it's clear that hi-tech companies are a lot more impressed than everyone else. In isolation, each of these offers different benefits – cost advantages with cloud, precision in operations with IoT and agility with digital supply chain. In combination, however, they could end up obsoleting much of the boxes-and-materials supply chain everybody else is still stuck with. Pioneers from consumer electronics, media and telecoms, and even hi-tech capital equipment are increasingly connecting these four technologies to offer customers instantaneous, personalised content or software capabilities on devices they already have.

The future of supply chain is being moulded by digitisation, supporting progressive innovations in business processes and business models.

There's also a big difference in enthusiasm for machine learning among hi-tech companies. This probably reflects an understanding of how activity on this virtual fulfilment system provides training datasets for artificial intelligence to develop. It suggests that hi-tech businesses able to develop and run a digital fulfilment system might also jump onto a steeper learning curve than other industries that lag.

Cloud computing is mature. Although the overall view that cloud is disruptive and important rose a little from 2015 to 2016, it's flattening. When the total data set is cut by industry, the only sector showing a meaningful increase in the past year is CPG & retail. Otherwise, we see a general acceptance of cloud, but minimal growth. This may be because cloud-based applications and computing power are widely established and proven. In terms of total cost of ownership, cloud offers significant advantages over on-premise software systems, but breakthrough process enablement may be more behind us than ahead.

Operational technology is catching up to information technology. Digitisation is huge these days, but the mind-set shift away from 'digital equals computers' to 'digital in everything' is still very much a work in progress. Operational technology including advanced robotics, drones, 3D printing, Uberisation and IoT is disruptive because it changes the way that material and equipment behave. It's important because these changes enable new business models that can be more personalised, less resource intensive and higher margin.

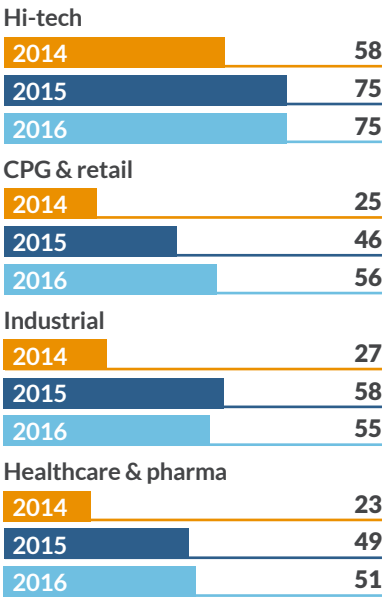
The extreme, but realistic use case is virtual inventory for maintenance parts in capital equipment situations. Operational technology includes IoT to know what needs to be fixed, 3D printing or robotics to make the part and drones or Uberisation to deliver it. Mix and match these tools to get better business results in aerospace, building controls, energy infrastructure and more. Creative thinking looks likely to open a whole range of opportunities in almost any business.

Digitisation is the most important trend shaping the future of supply chain today. It's enabling breakthrough innovation not only in business process, but also in business models. Just as we start to see supply chain leaders assuming more accountability for business strategy and performance, we're also seeing an explosion in the set of tools available to make the most of supply chain.

15. Cloud computing

Percentage of respondents who say it's 'disruptive and important'

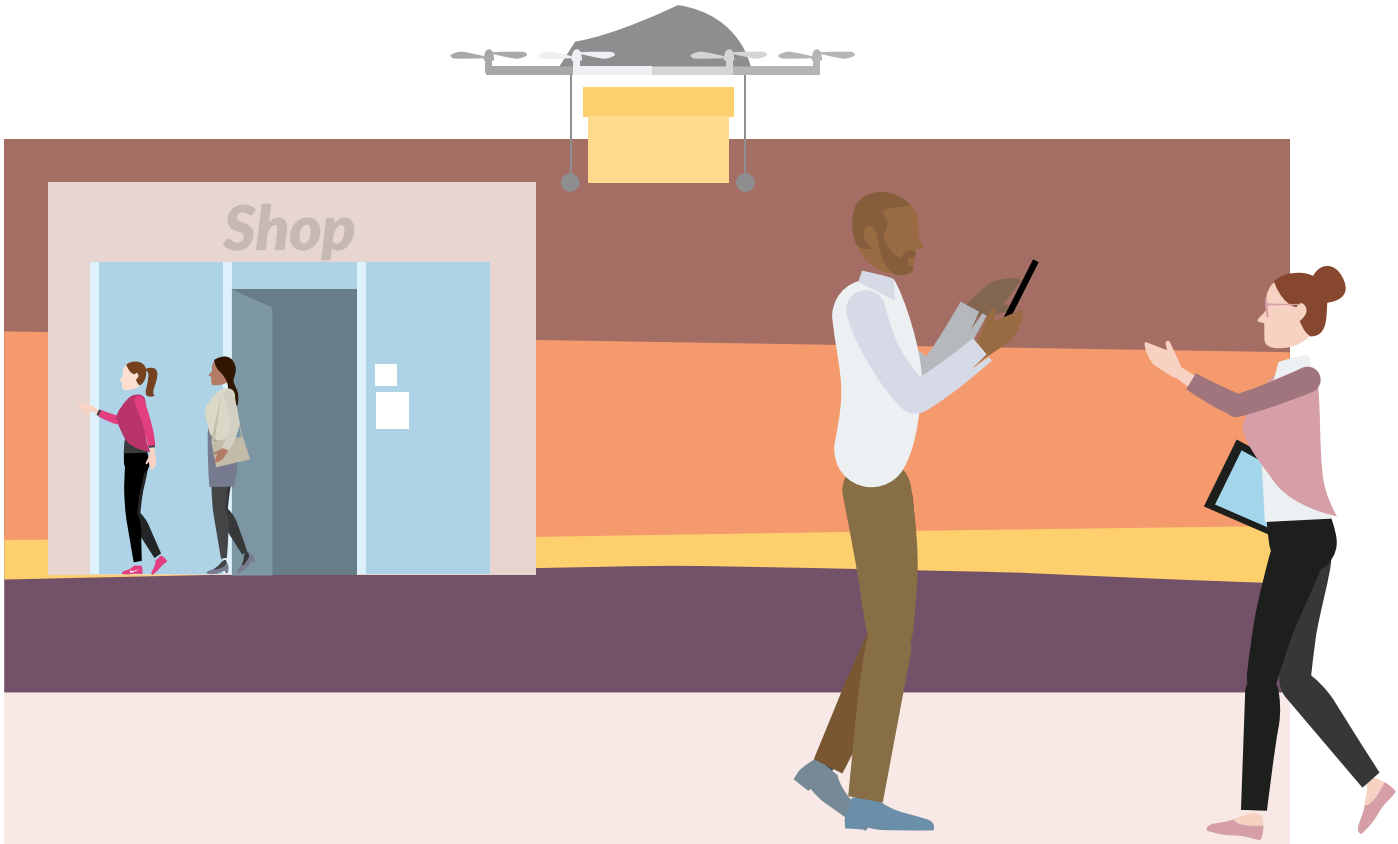
2014 n=857 | 2015 n=858
2016 n=1,283



16. Information vs operational technology

Percentage compound annual growth rate of responses rating 'important' (2014-16)

2014 n=1,060 | 2016 n=1,415



Digital demand and omnichannel

One of the first areas of supply chain strategy to be disrupted by digital was retail. Digital demand and the arrival of e-commerce had a huge impact on traditional brick and mortar retailers, starting around the millennium. Since that time, however, the pace of change has only accelerated, completely redefining what it means to be demand-driven.

Looking ahead, we see a continued, and if anything, more intense trend towards product complexity at the point of sale. Overall, two-thirds of respondents across industries say their SKU counts are rising in response to digital demand. More than a quarter say that they're supporting 'much larger' SKU assortments.

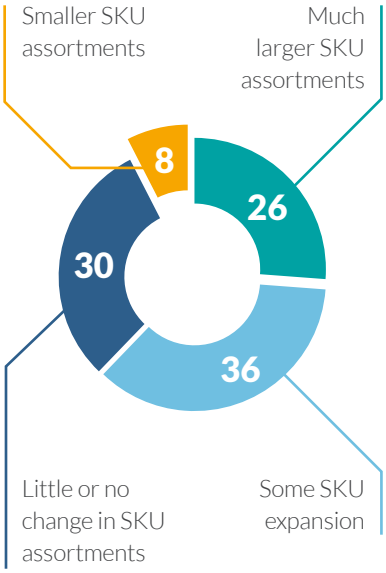
If we break the results down by industry and compare it to data collected on the same set of questions in 2014, we see a big jump in the portion saying they have 'much larger' SKU counts. Retailers and distributors stand out as the first point of contact meeting digital consumers' soaring expectations. Nearly half in both these groups say that they're handling 'much larger' SKU counts, both up by a third or more from 2014.

The forecast for other supply chains upstream in CPG, food & beverage and hi-tech is that consumer expectations for variety will force still higher SKU counts for brand manufacturers' supply chains.

Fabric & apparel offers an interesting insight, since direct-to-consumer channels are especially prominent here, and the share supporting much larger SKU counts is more than 50% higher this year. Automotive is another interesting case, since its product customisation capabilities are fast increasing and the share saying they have 'much larger' SKU assortments has also increased a lot since 2014.

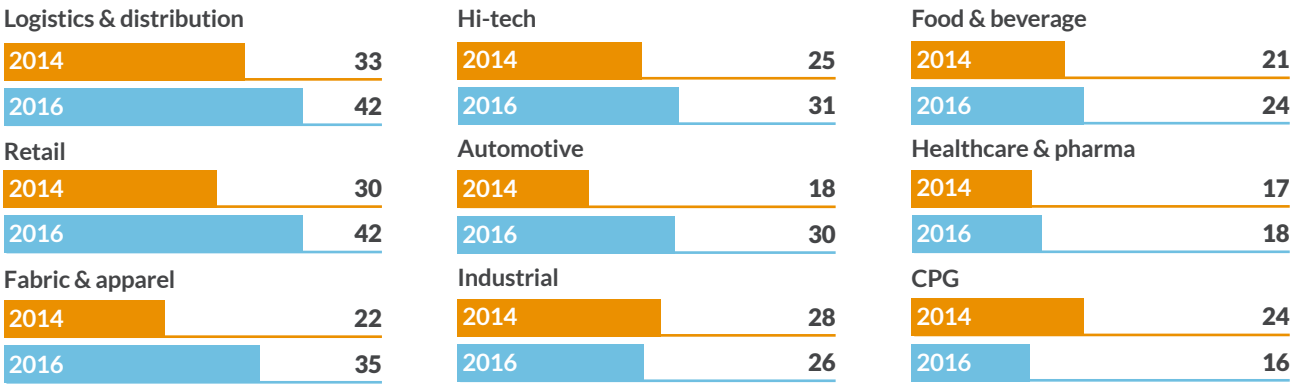
17. Impact of e-commerce and mobile consumers on SKUs

% of respondents | n=1,405



18. Percentage of respondents saying they're supporting 'much larger' SKU assortments

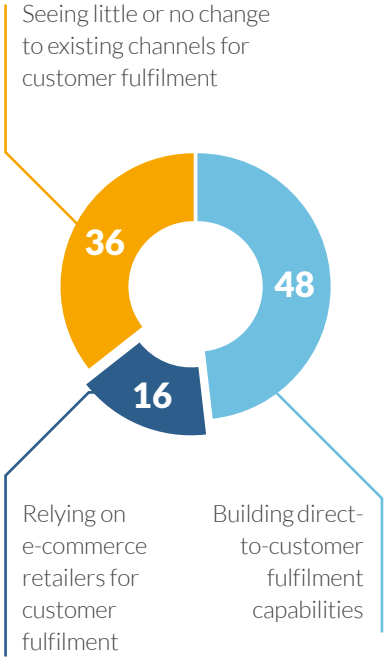
2014 n=920 | 2016 n=1,405



19. Impact of e-commerce and mobile consumers on customer fulfilment

% of respondents saying their supply chain is...

n=1,399



Product customisation is clearly rising and item variety is pushing its way back from the consumer's point of purchase – whether a shelf or a website – into the manufacturing supply chain upstream.

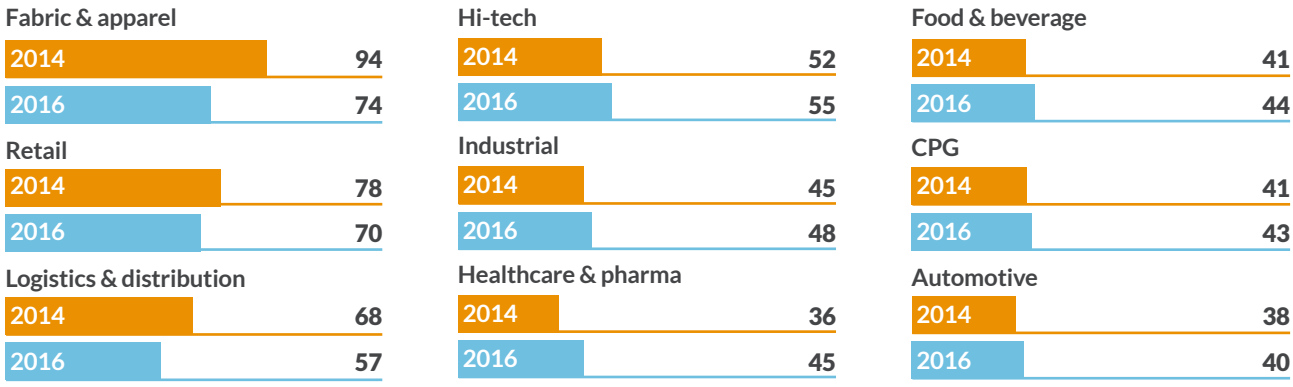
Direct-to-customer fulfilment capabilities for most supply chains means channel disruption, as sales through traditional retail or distribution partners gives way to a direct relationship with the end customer. The most common response this year to our question about direct-to-customer fulfilment was still 'building D2C fulfilment capabilities', but for those sectors most experienced with e-commerce, the trend is starting to plateau. Fabric & apparel, retail and logistics & distribution all show a drop-off in the percentage that are building direct-to-consumer capabilities. However, this appears to reflect a transition that's over for some, whereas other industries are still on the front edge of the trend.

The data shows one reversal since the first study of digital demand and omnichannel in 2012. This is a growing interest in smaller, more local distribution centres to serve the digitally empowered consumer. The aggregate dataset says distribution centre design is changing, but neither radically nor decisively in any one direction. 45% overall say they're still building the same kinds of distribution centres (DCs) now as before.

20. Building direct-to-customer fulfilment capabilities

Sector view 2014 vs 2016

% of respondents | 2014 n=925 | 2016 n=1,399



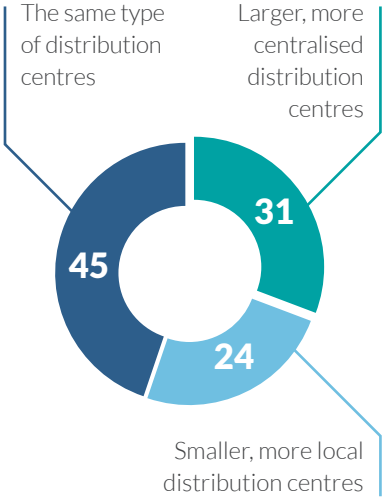
Among those (25% of the total) who say they're building smaller, more local DCs, an interesting trend is visible. 2012's survey asked about serving the 'e-commerce and mobile enabled consumer of the future'. At that time, 36% said they planned to build smaller DCs in the future. Since then, our survey has instead asked what types of DCs are being built currently, again in response to the demands of digital consumers. As the time series data shows, the predictions made by respondents in most industries have borne out, with a steady rise in the number actively building smaller, more local DCs. Most still have a way to go before reaching their original forecasts, which suggests that more building of this type of DC can be expected.

We also returned to a question that asked about uses of social media as a demand sensing tool. For each of the three types of demand insight, the jump in usefulness of social media has increased substantially.

21. Impact of e-commerce and mobile consumers on distribution centres

% of respondents saying their supply chain is supporting...

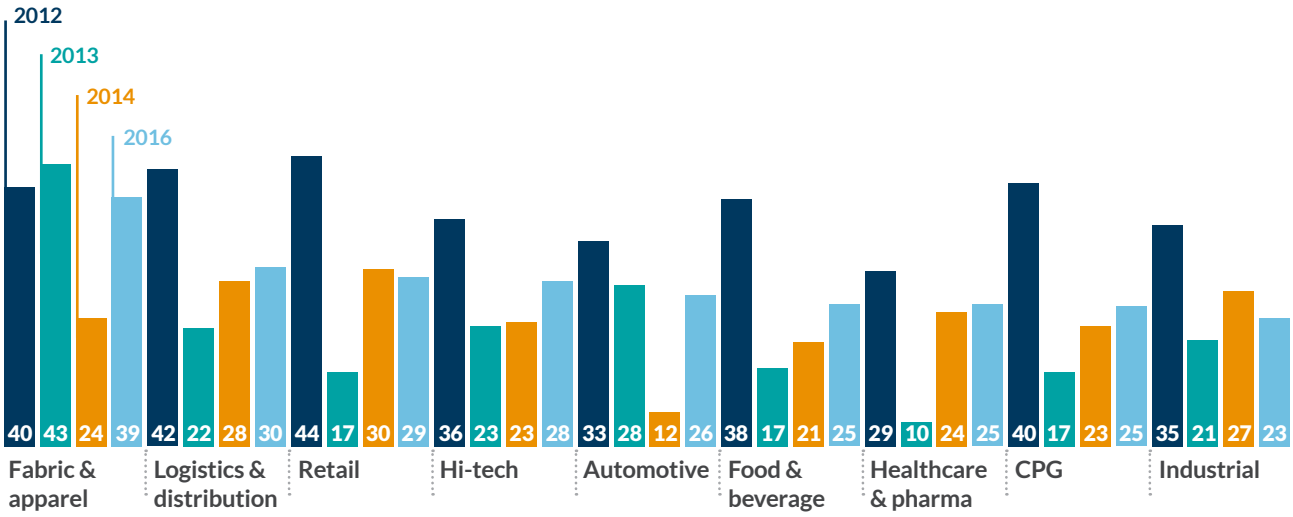
n=1,398



22. Smaller, more local distribution centres

Since 2012, there's largely been a rise in companies building smaller, more local distribution centres

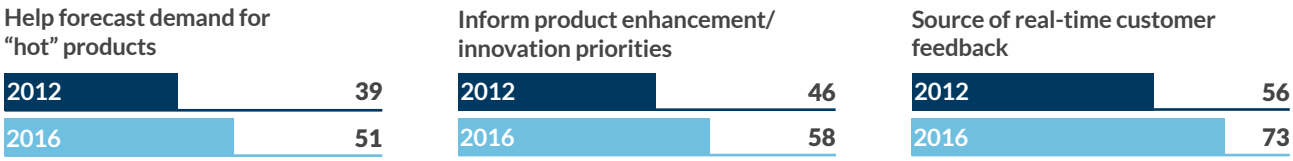
% of respondents | 2012 n=1,233 | 2013 n=714 | 2014 n=924 | 2016 n=1,398

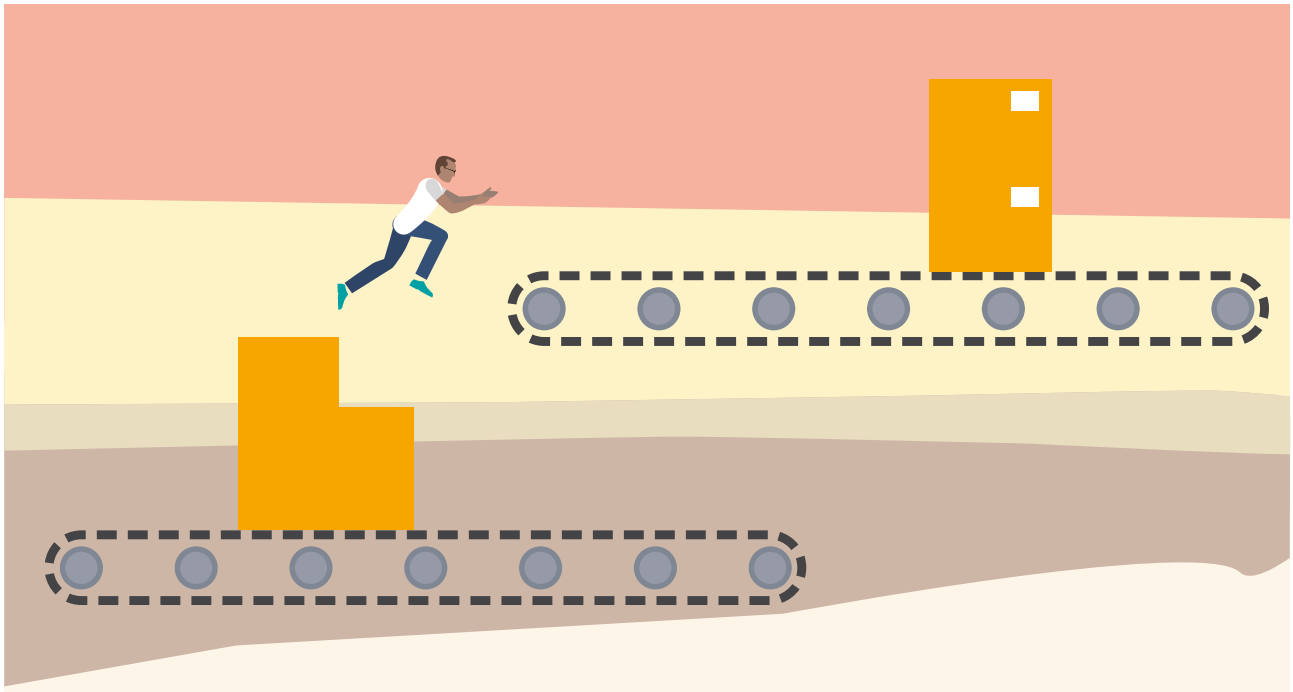


23. Social media and supply chain strategy: 2012 vs 2016

How do you expect social media to inform your company's supply chain management practices in the future?

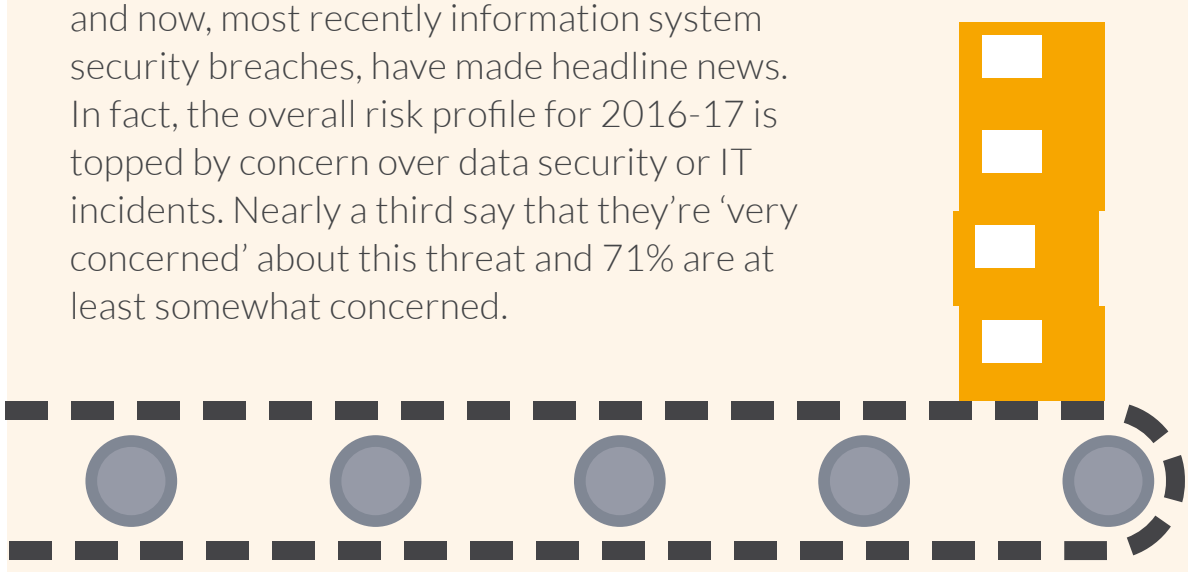
% of respondents | 2012 n=1,285 | 2016 n=1,385





Risk management

Supply chain risk management has matured over the past decade as a series of disruptive events from natural disasters to labour unrest and now, most recently information system security breaches, have made headline news. In fact, the overall risk profile for 2016-17 is topped by concern over data security or IT incidents. Nearly a third say that they're 'very concerned' about this threat and 71% are at least somewhat concerned.



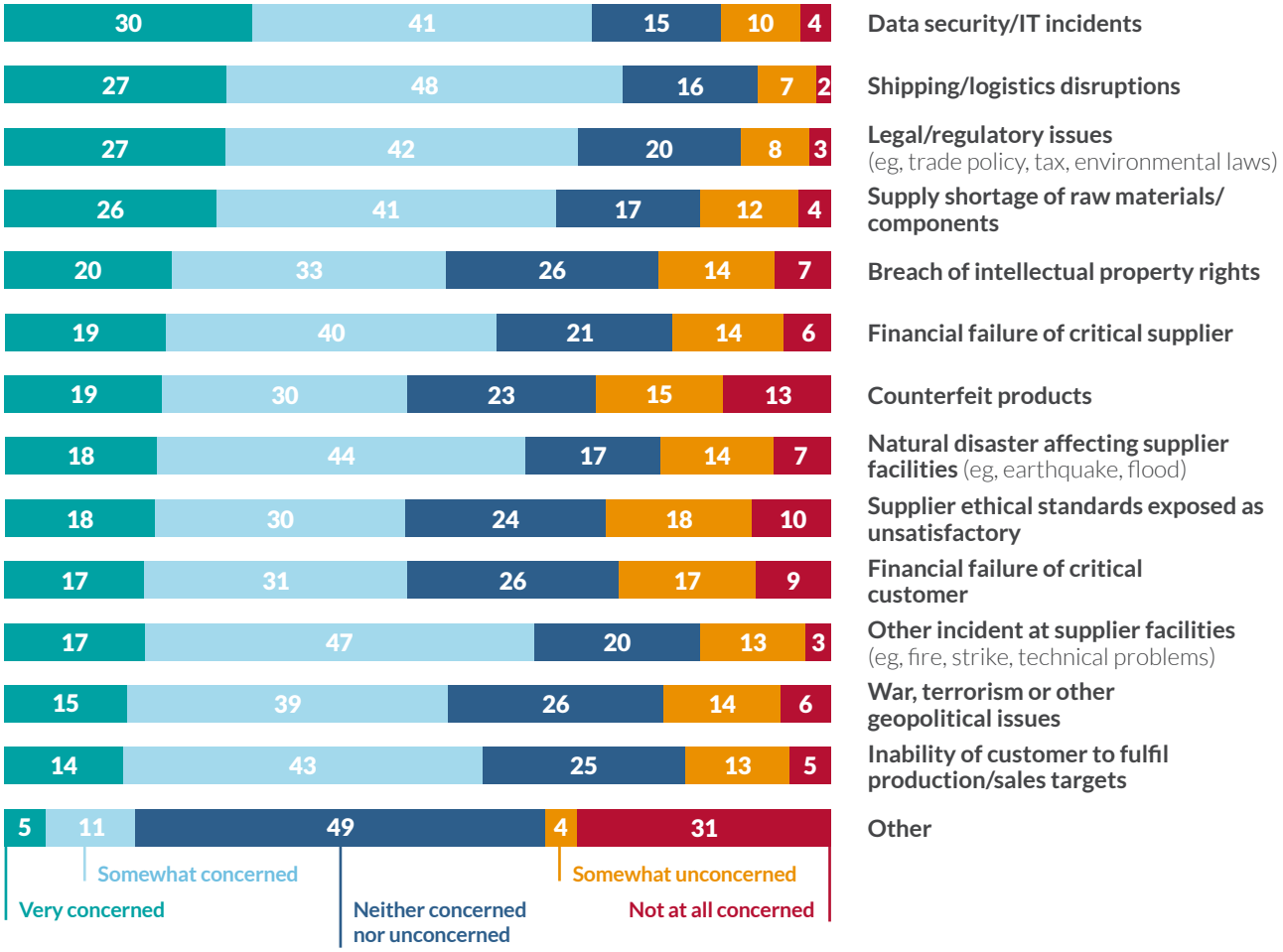
Shipping or logistics disruptions are nearly as problematic. Fewer say that they're 'very concerned' about transportation issues (27%) but nearly half (48%) are somewhat concerned, which means that three quarters of all 1,409 respondents see risk in their logistics systems – the most of any risk considered this year. Also high on the list are regulatory issues such as trade policy or tax regimes, and supply shortages of direct material – both of which were cited by two-thirds or more as at least somewhat concerning.

A second tier of supply chain risks including intellectual property breach, natural disaster, supplier facility problems like fires, strikes, etc, and even war or terrorism, are all cited by one fifth or fewer of all respondents as very concerning. Even among this group, however, none other than counterfeit products is dismissed by more than 50% as irrelevant. Risk remains a key challenge for supply chain leaders, even as the array of worries continues to shift with the times.

24. Key supply chain risk concerns

How concerned are you about the following risks within your supply and demand chains in 2016-17

% of respondents | n=1,409



In fact, looking at a selection of supply chain risk factors over time shows a gradual drop in worries about supplier-originated problems including financial failure of a supplier and supply shortage of raw materials or components. This suggests that some progress has been made over the years, with proactive risk management in areas where visibility, communication and analysis work to reduce exposure from weak links in the supply chain.

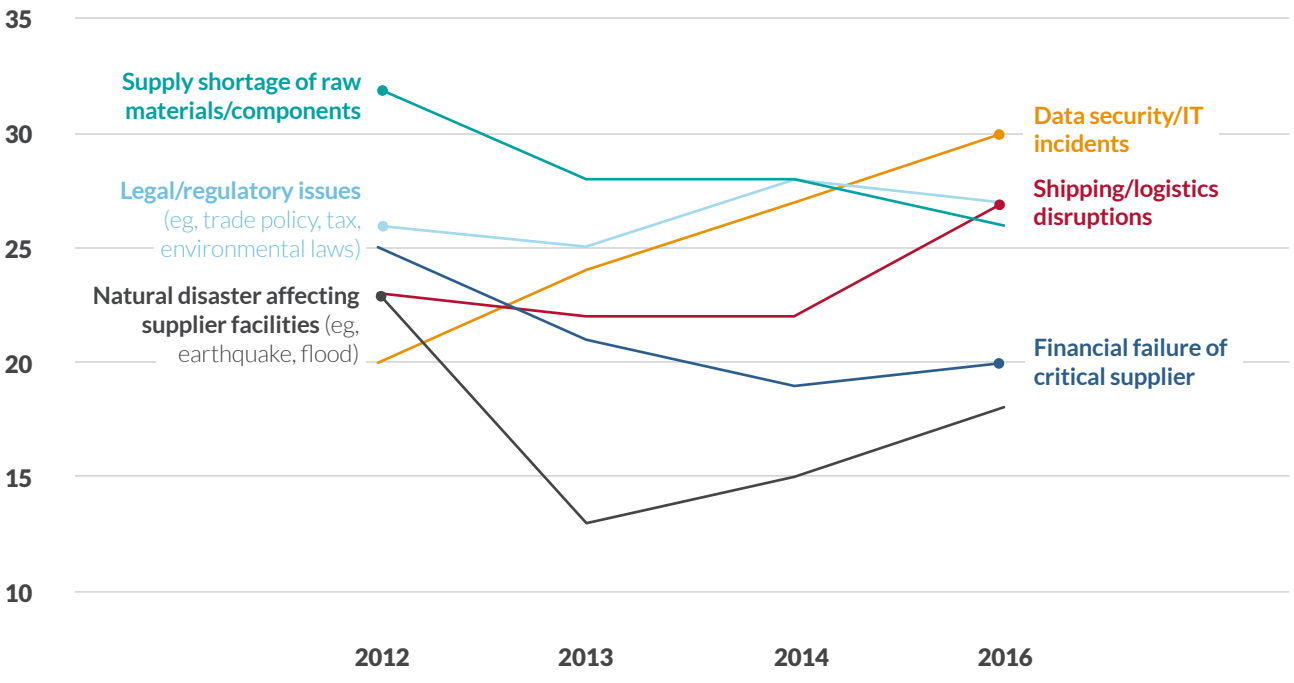
Risks that have risen since 2012 include shipping disruptions, legal or regulatory issues and, most decisively, data security or IT incidents. The common thread here is the influence of non-business actors in creating trouble. Where supplier breakdowns are the focus, deals can be struck, alternatives can be found and cost/benefit analyses can be applied. When the problem is hackers, pirates, unions or government officials, however, rational thinking may not help. These kinds of supply chain risks behave more like natural disasters, which are considered inherently unpredictable. Unlike natural disasters, however, their incidence seems to be rising.

In order to deal with supply chain risk, one key is upstream visibility. Nearly half say they have good visibility of potential risks into their second tier of suppliers, while only 39% admit to seeing no further than tier one. These figures are a small improvement on the same question we asked in 2013, when 46% claimed two-tier visibility and 41% were limited to tier one. The difference is probably not significant, which suggests that work remains to be done, even though problems caused by suppliers are in decline.

25. Supply chain risks

% of respondents that are "very concerned" about each risk year-on-year

2012 n=1,306 | 2013 n=746 | 2014 n=1,031 | 2016 n=1,408



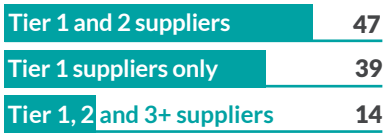
Applying an industry lens to the question of supply chain risk visibility offers a perspective on where to look for best, or at least, better, practice. Hi-tech and fabric & apparel stand out as having the smallest share of respondents who see no further than tier one and for having large shares who see to tier three and beyond. Automotive is also notable, with the highest percentage of respondents seeing to tier three and beyond. Experience in these industries with recent big incidents such as the Fukushima earthquake, the flooding in Thailand, the Rana Plaza collapse in Bangladesh and US west coast port closures have sharpened the mind on risk preparedness.

We also saw big jumps in the share of respondents who use social media analysis to manage upstream risk. When we asked about this practice in 2012, only a minority looked to social media for visibility on supply disruptions or regulatory compliance problems upstream. The figures for 2016 are about 50% higher and in both cases a majority say social media now helps with advance warning on these kinds of risks.

26. Sub-tier insights

Level at which companies have good visibility of potential risks

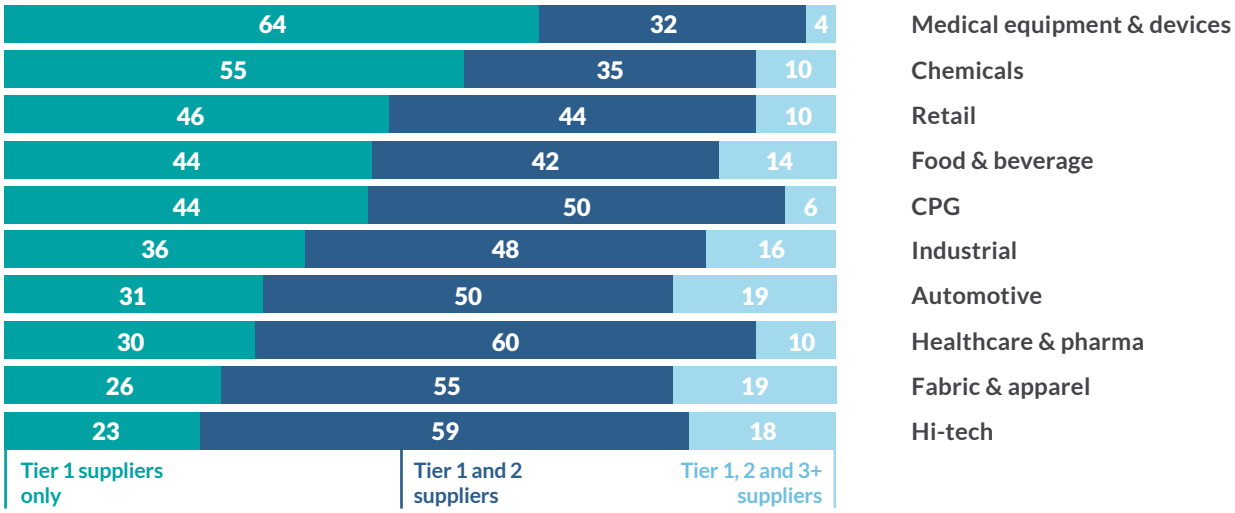
% of respondents | n=1,391



27. Sub-tier insights

Visibility of potential risks by sector

% of respondents | n=1,391



28. Social media and supply chains in the future

How do you expect social media to inform your company's supply chain management practices in the future?

% of respondents
2012 n=1,285 | 2016 n=1,385

Provide advance warning of potential supply disruptions (eg, supplier failure)

Shed light on social/environmental/ labour practices (country and company level)

Globalisation

2016 has been an extraordinary year in terms of globalisation and the sudden retreat of free trade principles around the world. Where 2015 saw continued trade liberalisation in important areas such as the negotiation of the Trans-Pacific Partnership (TPP) and discussion towards a US-EU trade pact, 2016 was a huge reversal.

First, Brexit voted the UK out of the European Union and second, the election of Donald Trump in the US brought a quick end to prospects for the TPP. The underlying politics of protectionism was not limited to the North Atlantic either, as nationalist parties around the world challenged economic orthodoxy on free trade.

Meanwhile, the inexorable logic of supply chain regionalisation kept moving towards a global network of increasingly local-for-local sourcing and production. The end of low-cost country manufacturing has been coming for years, even as some countries like Vietnam, Poland, India and Mexico attract interest from manufacturers looking to diversify away from China.

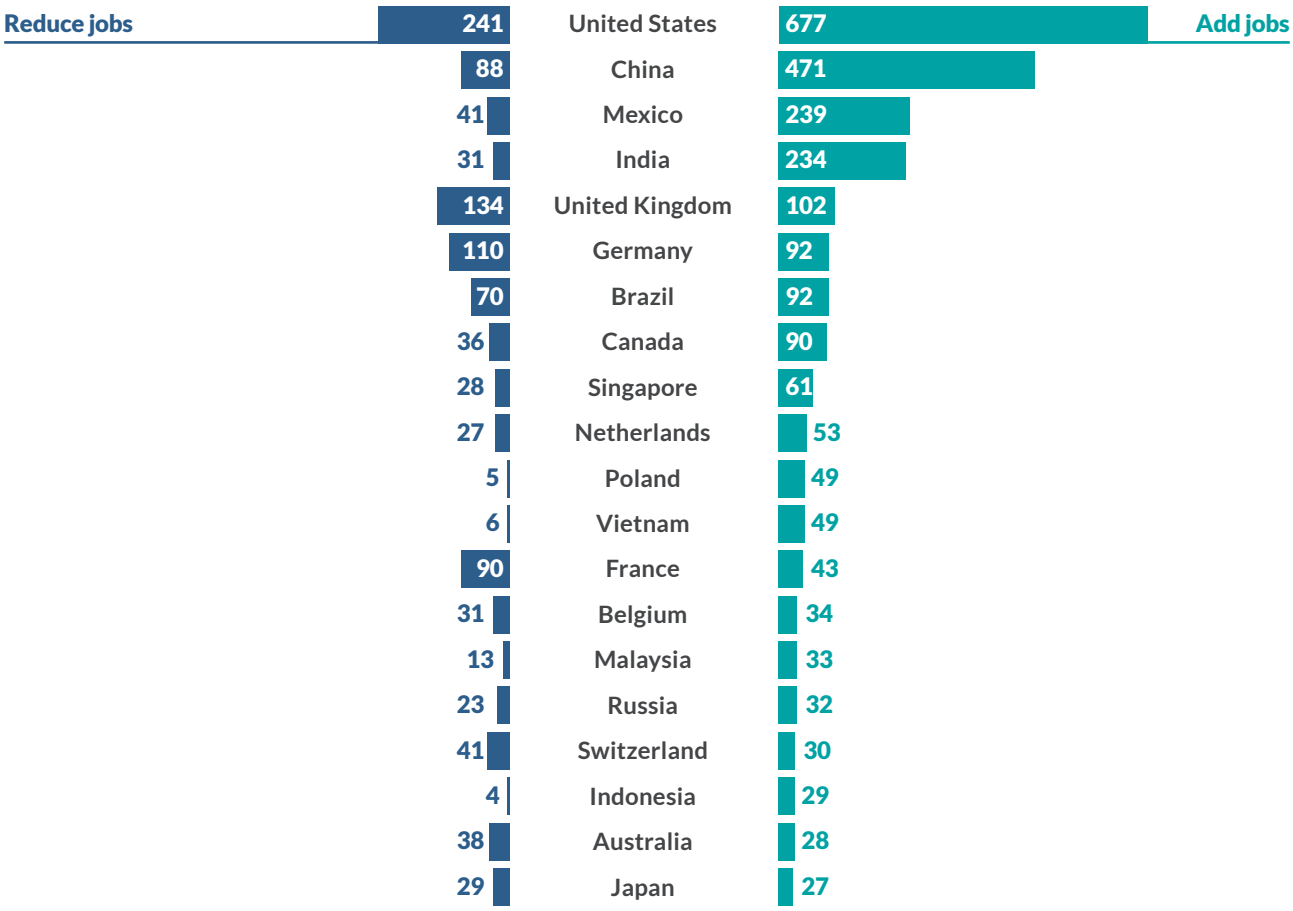
We asked survey respondents to name the top three countries in which they planned to add jobs in their supply chain organisations over the next three years. They were also asked to name the top three in which they planned to reduce jobs in the next three years. These jobs are assumed to include manufacturing, distribution, planning, purchasing and any other support roles comprising a s upply chain organisation. Therefore, the data reflects hiring plans specific to supply chain in terms of individual managers' intent. They are not the number of jobs to be added or eliminated, nor are they meant to be an exhaustive count of country-specific positions, just the top three.

Where 2015 saw continued trade liberalisation in huge areas such as the negotiation of the Trans-Pacific Partnership (TPP) and discussion towards a US-EU trade pact, 2016 was a huge reversal.

29. Supply chain jobs—winners and losers

Where jobs in the supply chain organisation will be added/reduced in the next three years

Individual votes, top three countries selected | n=1,179



30. Where jobs in the supply chain organisation will be added/reduced in the next three years

Individual votes | 2016 n=1,179 | 2015 n=730

2016	Germany	France	United Kingdom	Total
Reductions	110	90	134	334
Additions	92	43	102	237
Loss/add ratio	1.2	2.1	1.3	1.4

2015	Germany	France	United Kingdom	Total
Reductions	80	86	83	249
Additions	45	17	56	118
Loss/add ratio	1.8	5.1	1.5	2.1

The profile in aggregate shows big net additional hiring planned for the biggest markets like the US, where planned additions outnumber planned reductions nearly three to one; China, where the ratio is more than five to one; and India, where it's almost eight to one. Countries with solid manufacturing bases and good market access like Mexico, Poland and Vietnam all promise overwhelming growth in job creation, with a nearly 10:1 ratio in favour of additional hiring. These figures, as well as those for the US, China, India and even Brazil, confirm a trend towards sourcing and production closer to end markets.

The obvious net losers are those European countries with high labour costs and cheaper in-market alternatives like Poland and the Czech Republic. Germany, France and the UK should all see more cuts than adds to supply chain payrolls in the next few years. The trend even here, however, looks like a return to local-for-local supply chains. When the 2016 planned reductions to planned additions ratio for these three big, high-cost countries are compared to figures for 2015, it's clear that the net outflow of jobs is slowing down. In aggregate, 2015 respondents' staffing plans in Germany, France and the UK promised more than 2:1 to cut jobs. That figure for 2016 is down to 1.4:1, which suggests that even in high-cost countries, local-for-local supply chains are gaining traction.

2016 data shows local-for-local supply chain is becoming more apparent in high-cost countries.

Drilling into the 2016 data by industry reveals something about where supply chain job creation could be impacted by changing rules around global trade. China and Mexico, for instance, which are poised for conflict with the United States, are still clearly adding human resources in key manufacturing sectors like automotive, industrial and hi-tech. In the case of China, much of this is known to be focused on serving the Chinese domestic market, but plenty still finds its way into export markets. Mexico is beefing up still to serve the US market, but with uncertainty about NAFTA suddenly casting a shadow over the prospect of seamless regional supply chains, some of these plans could change.

After the Brexit vote, the data collected about the UK is interesting. With free trade under threat, capacity plans in the UK for EU markets are being reconsidered.

The UK is an interesting case because our data was collected after the Brexit vote, which could explain some of the 2:1 tilt away from job creation in Britain. Automakers, for instance, are reconsidering capacity plans in the UK meant for continental European markets now that free trade is threatened. The US, by contrast, is heavily favouring the net addition of domestic positions in these three sectors, which suggests that the huge scale of its market may insulate the country's economy against possible shocks from trade conflict.

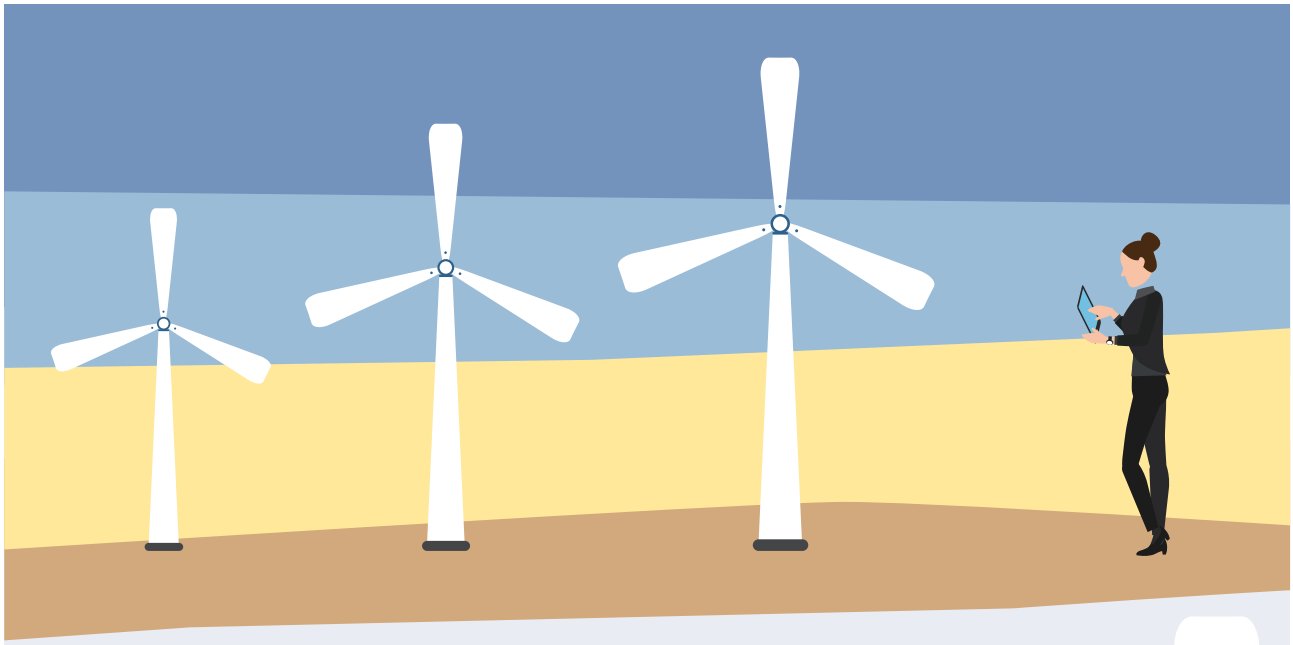
Local-for-local supply chains appear even more likely in the near future. The trends already in place around automation, market proximity and extended supply chain risk have been pushing supply network designs this way since at least 2012 (see SCM World report, *Manufacturing footprints: Getting to Plant X* for more information[1]). With the added impetus of retreating free trade policies, regional supply chain structures look poised to concentrate even faster.

31. Where jobs in the supply chain organisation will be added/reduced in the next three years

Split by sector

Individual votes | n=1,179

	China	Mexico	United Kingdom	United States	
Automotive	62	47	3	76	Jobs added
	4	3	14	12	Jobs removed
Hi-tech	62	28	10	67	
	12	5	20	30	
Industrial	74	36	7	61	
	15	11	15	32	

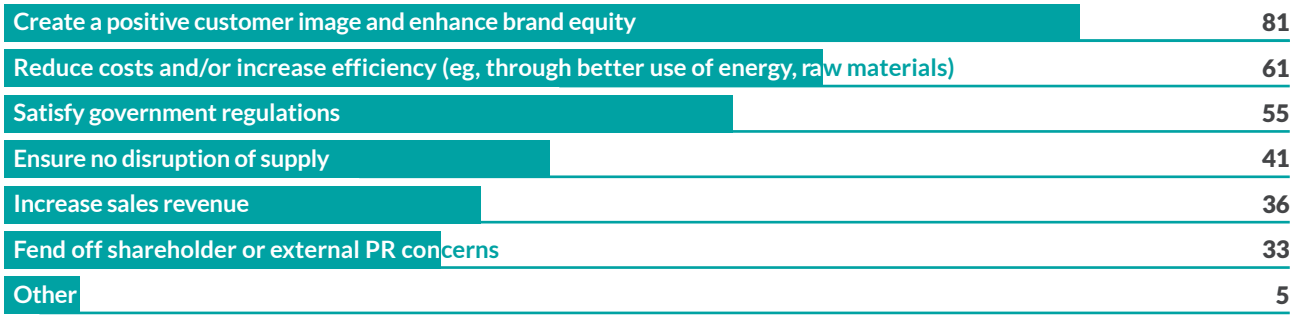


Social and environmental responsibility

One megatrend that supply chain executives have been tracking for more than a decade now is social and environmental responsibility (SER). Early thinking about sustainable supply chains has borne fruit and galvanised leadership teams as well as new recruits. The primary business driver of these initiatives is still assumed to be the board's preference for a positive customer image and enhanced brand equity.

32. The board's motivations for investing in social and environmental responsibility

% of respondents | n=1,346



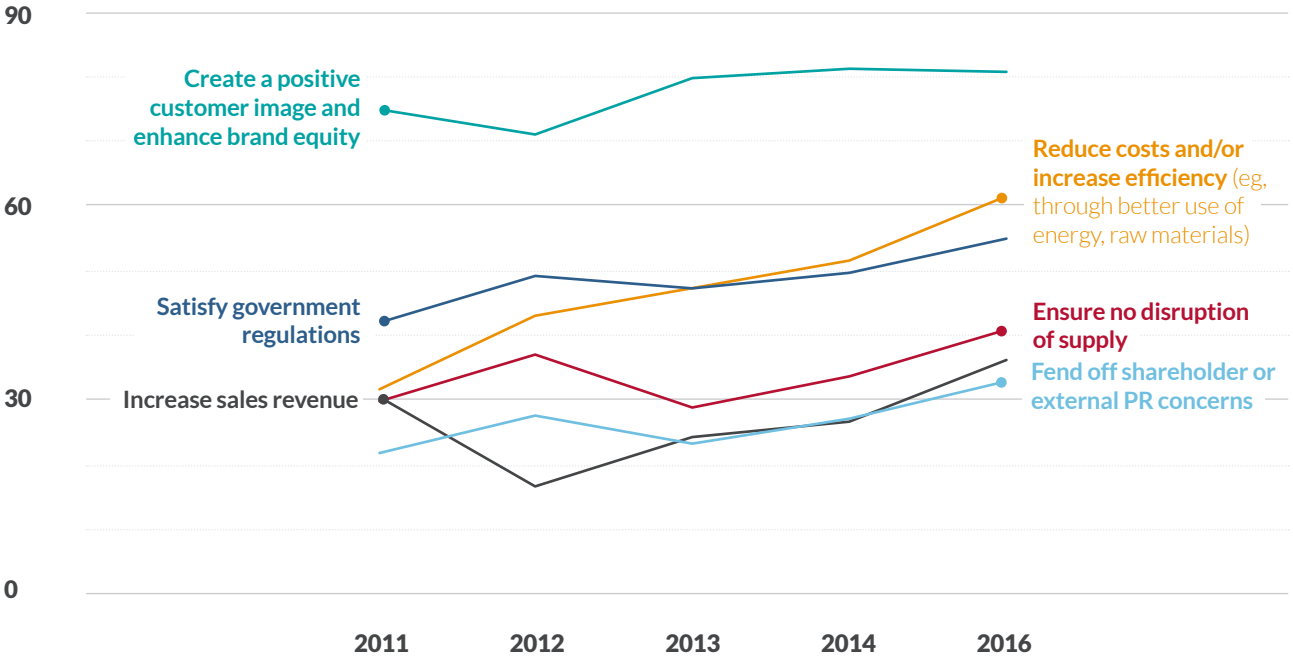
Viewed as a time series, however, since 2011, when we first collected this data, the most notable trend is the steady and substantial increase in the share of respondents who believe the board's support of SER initiatives is based on cost savings. The figure has almost doubled from a mere 32% who felt SER was about cost savings in 2011, to 61% in 2016.

Reflecting back on responses to the questions we asked above about supply chain purpose, it's not hard to see why so many in the profession are optimistic. Especially for ensuring long-term environmental sustainability, the financial payback of things like waste reduction, renewable energy initiatives and even circular economy efforts shows that SER can save money.

33. Motivations for investing in social and environmental responsibility

% of respondents

2011 n=528 | 2012 n=1,282 | 2013 n=748 | 2014 n=973 | 2016 n=1,346



Both of these activities saw a meaningful rise from 2015 in the share of respondents who see a financial payback. Waste reduction rose from 65% last year seeing a positive return on investment to 70% this year, and renewable energy jumped from 41% to 47%, projecting a financial gain. The scaling of environmental sustainability initiatives is taking the game of SER from proof-of-concept to everyday reality in at least these areas.

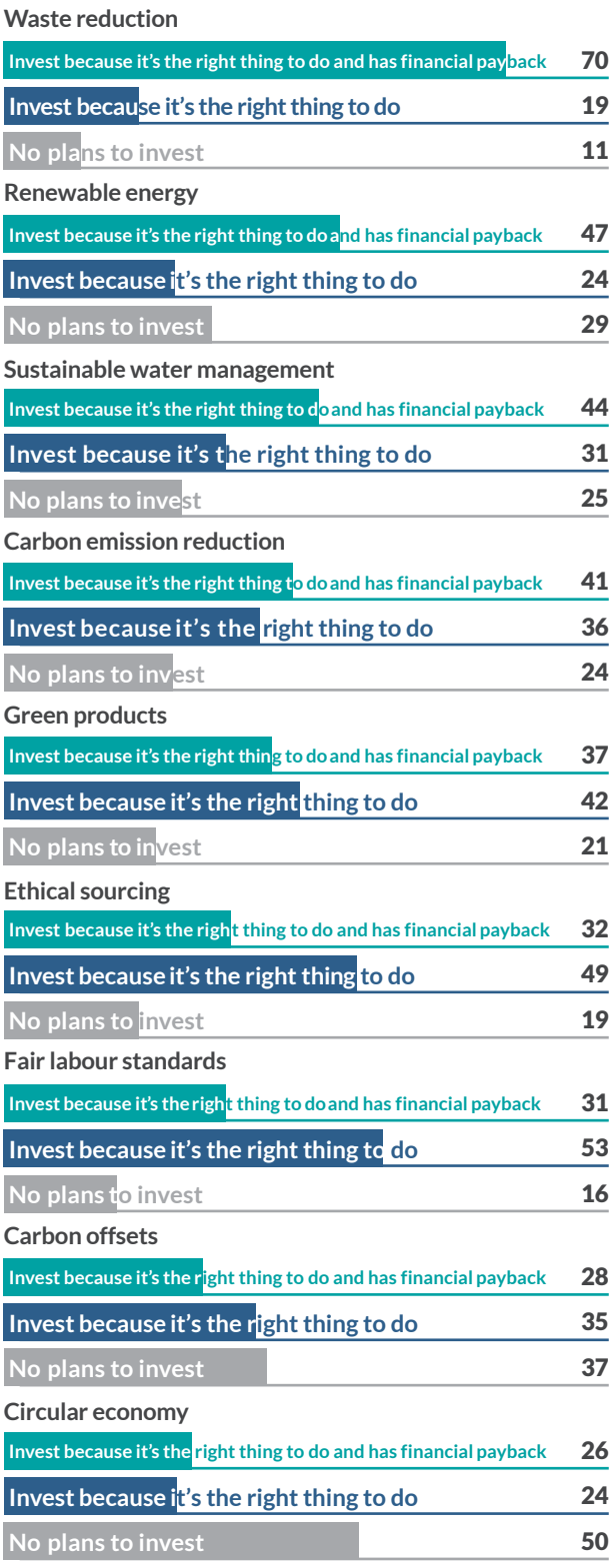
Other SER activities planned in the next 18 months include sustainable water management, which 44% of respondents are planning and believe has financial payback, and carbon emissions reductions, which 41% say have a positive ROI. Others including green products, ethical sourcing, and fair labour standards are planned for around four-fifths of all companies, but in these cases, fewer see a payback than are proceeding mainly because its "the right thing to do". The share of these three who do see a payback has in fact been flat or decreasing since last year, suggesting that social responsibility has yet to find a solid supporting economic argument in favour.

Of particular interest in this year's data is the very large increase in respondents who cite the circular economy as something they plan to invest in, both because it's the right thing to do and has a financial payback. The concept, which essentially treats all resources associated with a given value chain as recapturable or reusable, aligns with technology trends in digitisation. As a relatively new idea, circular economy demands more examination, but the share who said it has financial payback rose from only 18% in 2015 to 26% this year. It may be that this approach emerges as a better way to think about environmental sustainability as essentially embedded in business sustainability.

34. Sustainability initiatives

Company approach during the next 18 months

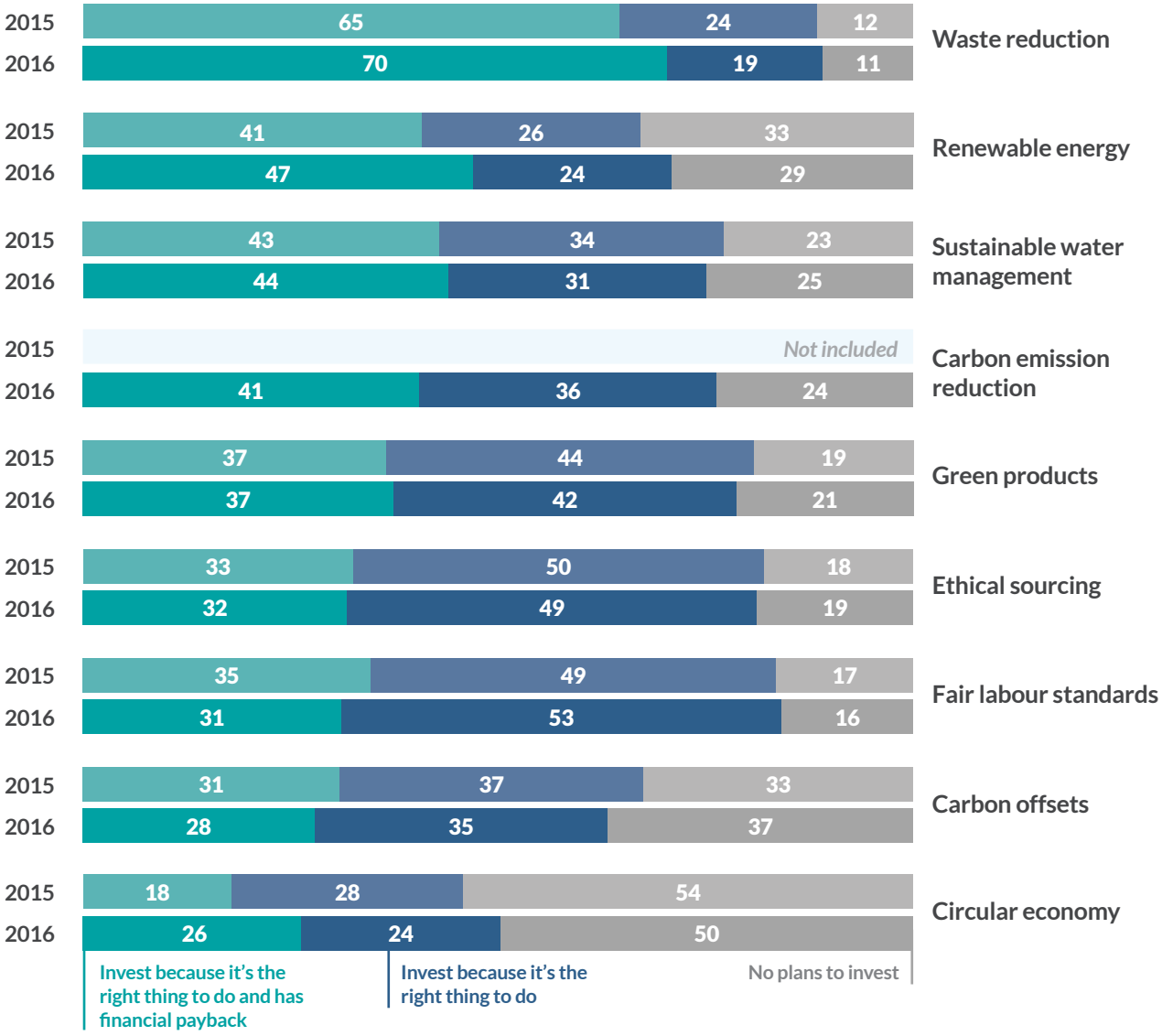
% of respondents | n=1,301

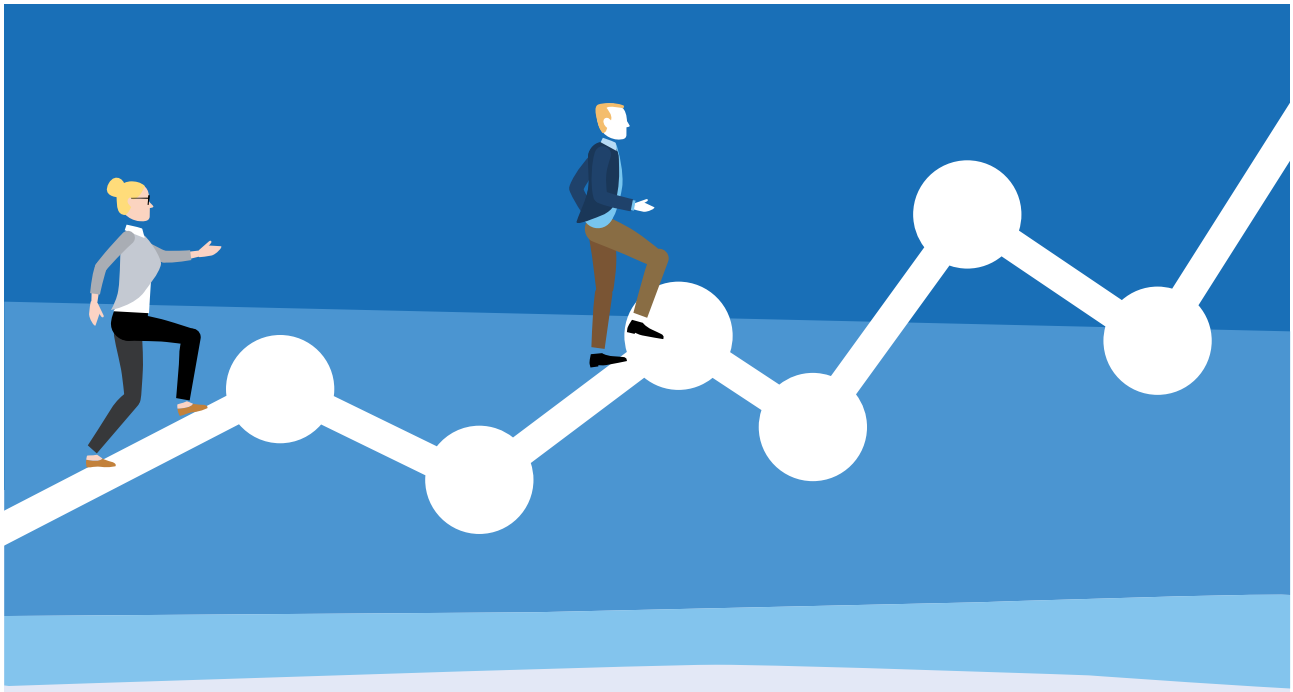


35. Sustainability initiatives

Company approach during the next 18 months

% of respondents | 2015 n=996 | 2016 n=1,301





Talent management

With so many forces of change in supply chain, it's little surprise that a war for talent continues to rage. In fact, according to data that SCM World has collected since 2012, the top two challenges this year – finding talent and making the hire – have risen steadily since 2013. In part, this reflects a tightening overall job market, at least in the United States where unemployment is below 5%. But more to the point, it's about skills that are increasingly hard to find, develop and retain.

One interesting trend we see in the time series data, however, points to an improvement in the way that senior leaders manage their top talent. Offering a compelling career progression, measuring staff and relocating staff all became easier over the past two years. Is this despite or because of a tightening war for talent in supply chain? On one hand, retention challenges have risen slightly since 2014, but perhaps this would have been worse without so many aggressive talent development programs having been started or extended in the past few years. The macro takeaway is clear: talented supply chain people are in high demand and organisations are responding by investing more in their careers. It's a good time to be a supply chain professional.

Another angle on the question of supply chain talent concerns what skills matter most. The data shows not only that foundational skills in planning, procurement, manufacturing and logistics are important, but that general management and even leadership skills are critical to success.

Talented supply chain people are in high demand and organisations are responding by investing more in their careers.

In fact, for the first time this year 'communication and influence' ranked higher as an essential skill for the supply chain executive of 2020 than foundational skills. For the most senior executives, this phenomenon is even more important: 91% of C-level respondents called communication and influence 'essential' for leaders in 2020 as compared to 89% overall.

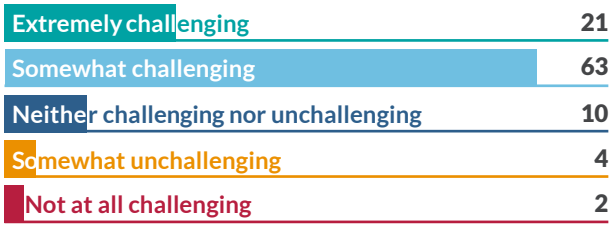
C-level respondents differed from the general population in other important ways. 75% of C-level respondents for instance cited 'financial acumen' as essential compared to only 67% for the general population and 58% chose customer service/sales compared to only 50% for the wider population. In terms of skills a CEO needs to master, these two are high on the list. It's instructive to see what senior leaders expect in terms of knowledge around the most essential elements of a typical quarterly financial analyst call: sales revenue and profitability.

Related general business skills that also factored strongly into the profile of an ideal future supply chain leader include business strategy and change management. As we saw earlier in the survey responses around leadership and purpose, it's increasingly clear that supply chain is developing as a much more common path to the corner office. Once a decidedly technical support function, supply chain in 2017 has become a cornerstone of competitive strategy and business growth.

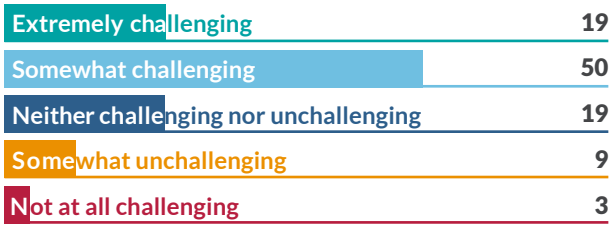
36. How challenging are the following issues in respect of knowledge workers?

% of respondents | n=1,407

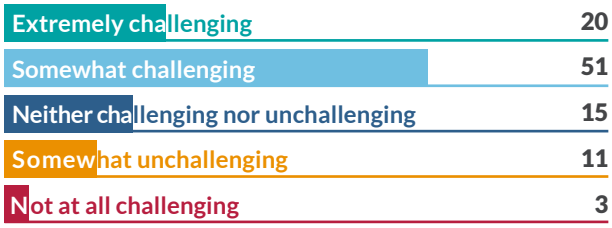
Finding talent



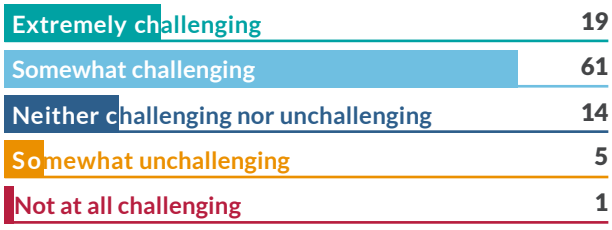
Retaining talent



Offering talented staff a compelling career progression

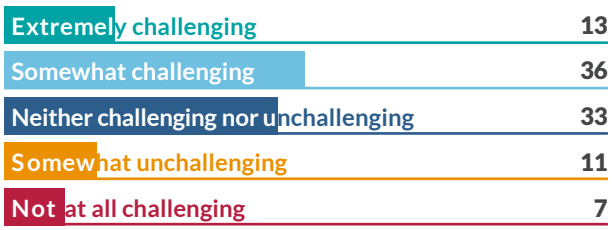


Hiring talent

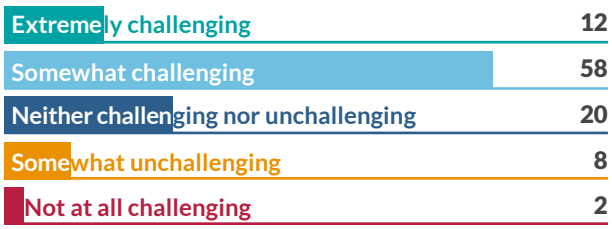


Willingness of talent to relocate internationally

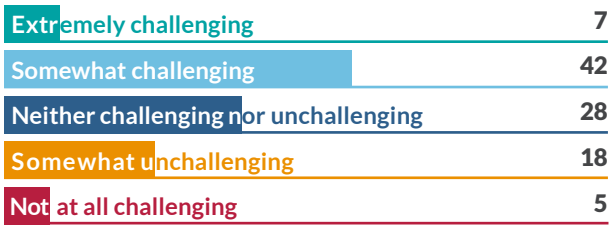
(eg, to China, Mexico)



Developing skills among existing staff



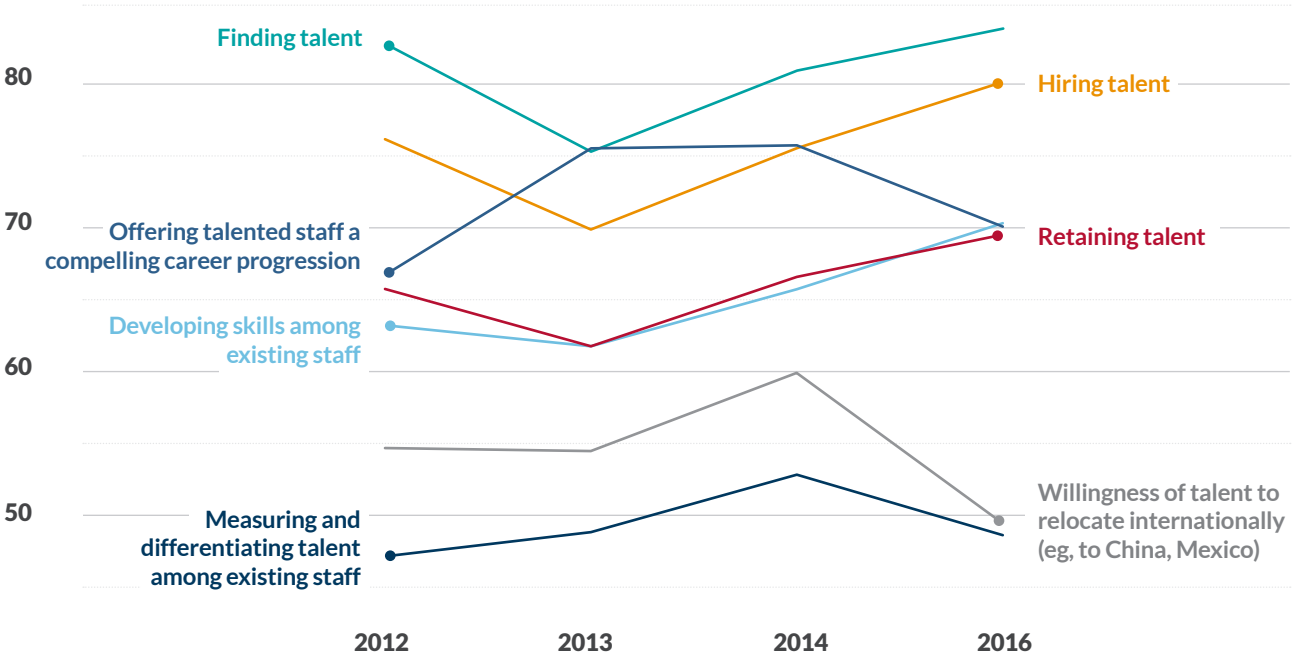
Measuring and differentiating talent among existing staff



37. Annual survey results since 2012

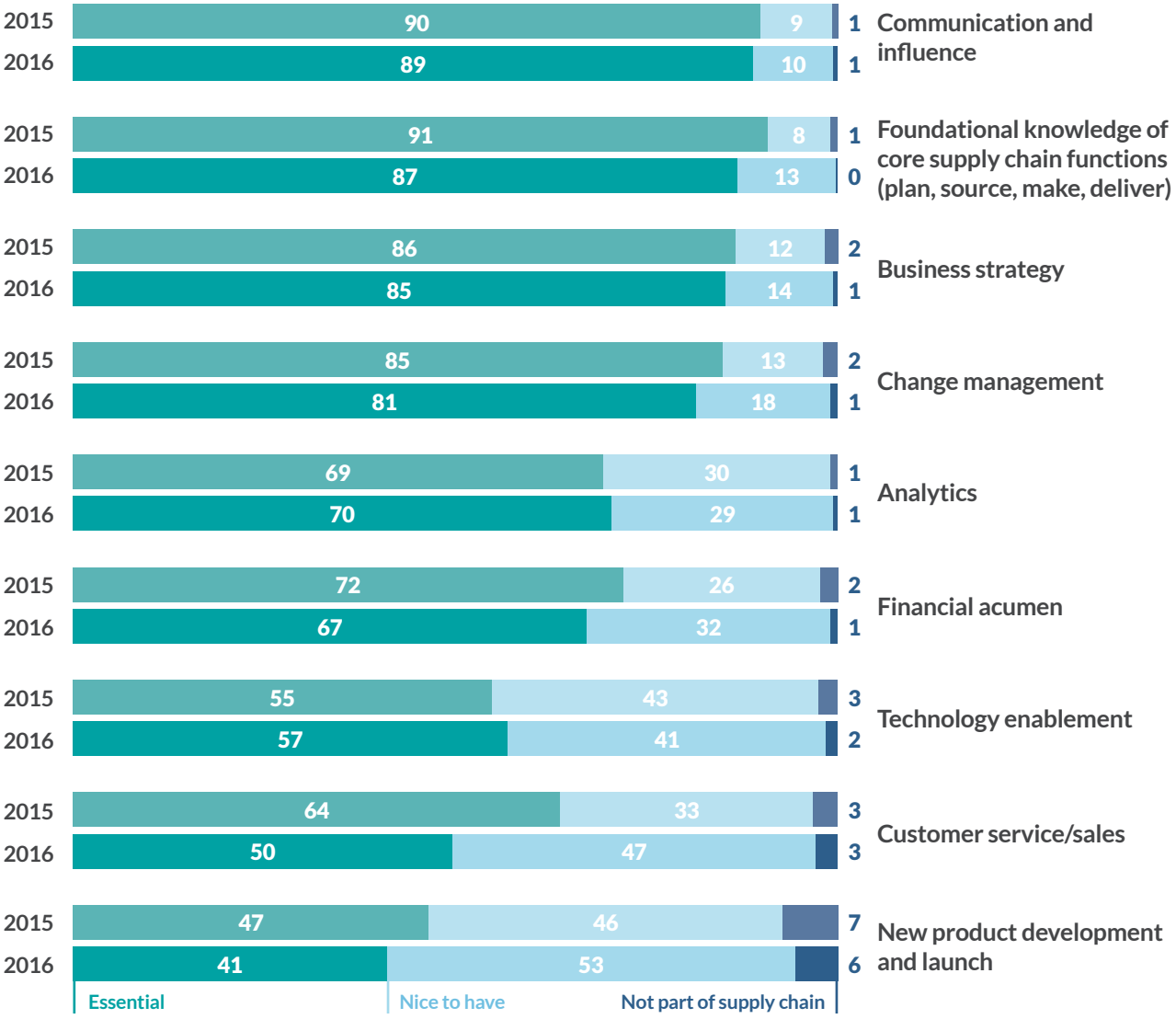
How challenging are the following issues in respect of knowledge workers?

% of respondents | 2012 n=1,303 | 2013 n=742 | 2014 n=1,021 | 2016 n=1,407



38. What skills will comprise a supply chain executive's skill profile in 2020?

% of respondents | n=1,410



Conclusion & recommendations

The future of supply chain is exciting. The stakes are higher than ever and trending up, both in terms of how supply chain helps the business succeed and in terms or dealing with emerging risks and challenges.

Digitisation is the dominant trend shaping the future of supply chain. On the bright side, rapid technology advances are combining to allow new and different strategies to be explored. Some will no doubt enable businesses to accommodate or even lead customers' demand for personalisation. Some will help find leaner, more efficient ways to manage resources, both natural and human, to help deliver a sustainable future.

Digitisation also has a dark side with data security and IT breaches now topping supply chain risk worries. After all, connectivity magnifies the threat of malicious or accidental problems rippling through our businesses and economies.

People are the answer. Local-for-local supply chains are on the rise at the same time that supply chain skill sets are leaning toward business leadership instead of technical knowledge. The challenge is to find, develop and retain the right people without falling into a cost centre mentality. Only by leveraging learning across supply chain organisations can the complexity and speed of the world ahead be tamed.

As you think ahead to your supply chain strategy for 2017 and beyond, here are some recommendations to consider:

- **Define a digitisation roadmap for all operations.** This is not just about information systems but is instead a digital footprint of any and all tools deployed to sense and respond to both demand and supply. It is not about process design so much as capability enablement and it absolutely includes inputs and outputs from beyond the supply chain organisation.

- **Look to local-for-local sourcing first.** This will be especially difficult for traditionally far-flung global supply networks like those in hi-tech, but the risks and costs of sourcing for lowest part cost regardless of country of origin is unacceptable going forward. Technology in manufacturing is making this much easier. Platforming strategies in product and process design will help make the most of shared R&D while averting some of the threats attached to long-distance, cross-border supply chains.

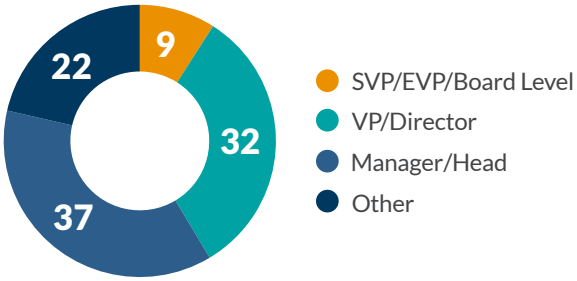
- **Bet on people.** Hiring plans in supply chain show that a global talent pool is being tapped aggressively now. Improvements in career path planning and talent development programs offer hope that supply chain executives in 2020 and beyond will be capable of handling the ambiguity and pace of business in the next decade. This is probably the most important investment leaders can make now to prepare for the future.

About the research

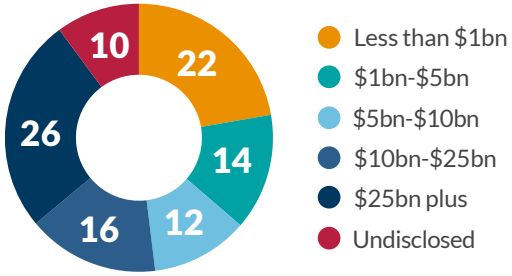
In September 2016, invitations to complete an online survey were sent to members of SCM World and to a wider group of practitioners in supply chain and other functions globally. In total, 1,415 completed responses were received during the survey period.

Key demographics are as follows (all figures represent % of respondents):

Job level



Company size



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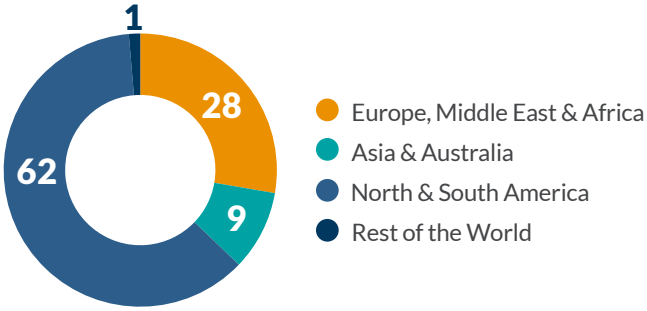

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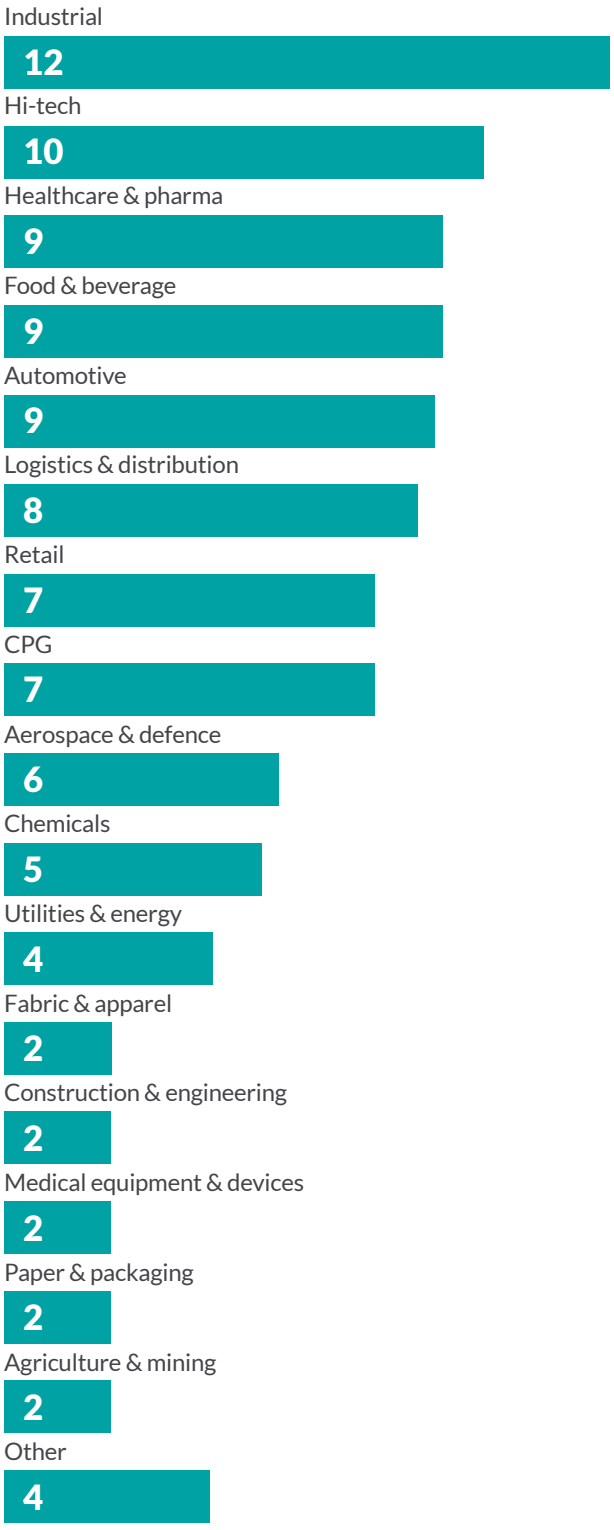

Job function

References

1 *Manufacturing footprints: Getting to Plant X*, SCM World, April 2013

Previous annual surveys

The Chief Supply Chain Officer Report 2011, SCM World, May 2011

The Chief Supply Chain Officer Report 2012, SCM World, September 2012

The Chief Supply Chain Officer Report 2013, SCM World, September 2013

The Chief Supply Chain Officer Report 2014, SCM World, September 2014

Future of Supply Chain Report 2015, SCM World, September 2015

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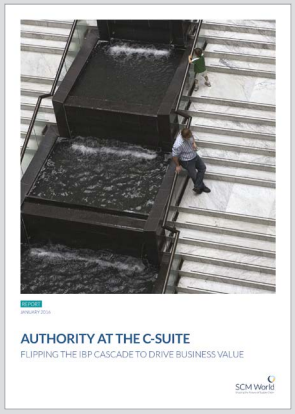

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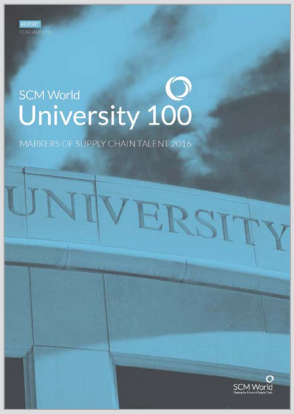

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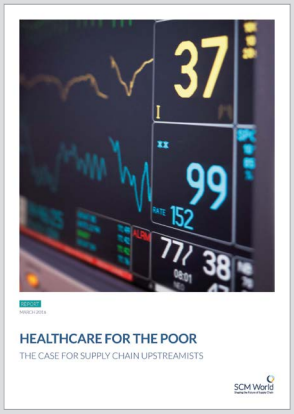

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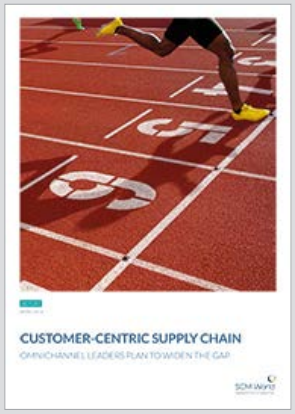

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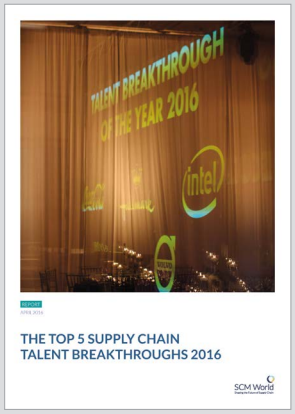

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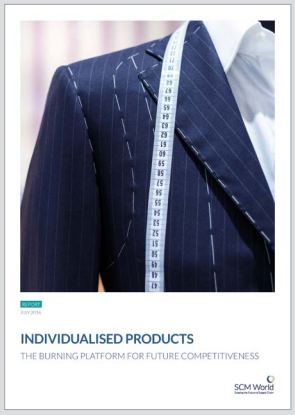

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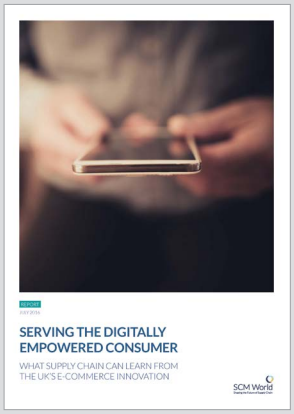

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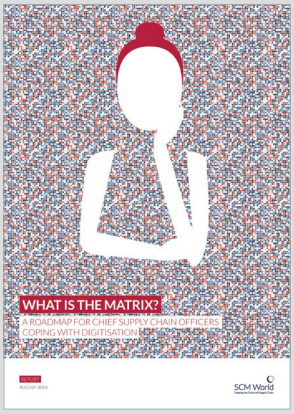

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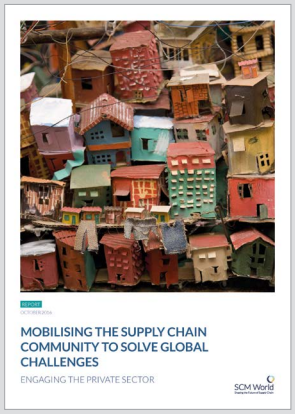

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